



Studerterprojekter - 2015: Styrkelsen af kontakten mellem DTU og Lyngby Lyngby som en vidensby

Frier Ørgaard, Lærke ; Nielsen, Susanne Balslev

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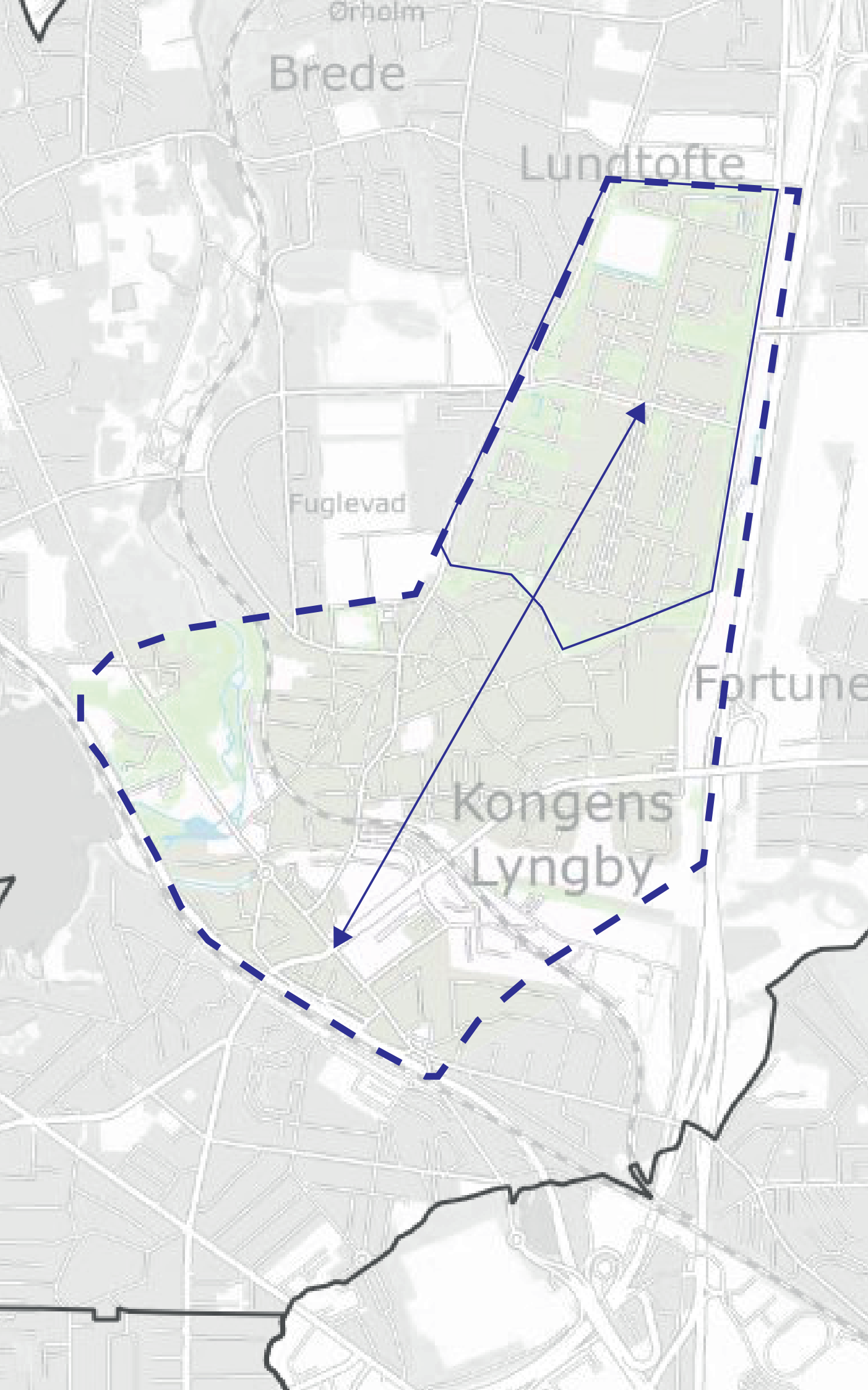
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Studerterprojekter – 2015

Styrkelse af kontakten mellem DTU og Lyngby
Lyngby som en vidensby

Forord

Dette er en samling af studenterprojekter, der viser hvordan forbindelsen mellem Kgs. Lyngby og Danmarks Tekniske Universitet (DTU) kan styrkes; hvilket er helt centralt i visionen for Lyngby Vidensby. Projekterne er lavet som en del af kandidatkurset "42273 Urban planning and sustainable urban development" i foråret 2015 på DTU, under vejledning af Per Sieverts Nielsen og Susanne Balslev Nielsen. Fokus er især hvordan fremtidens Lyngby kan blive bedre set fra studerende ved DTU's.

Studenterprojekterne spænder over mange forskellige emner, men væsentligt for de fleste er at et mål om at gøre Lyngby mere attraktiv og tiltrække mere liv til byen.

Emnerne er:

1. den fysiske forbindelse mellem byen og DTU,
2. bæredygtige mobilitets muligheder,
3. mødesteder i form af et forbedret byrum,
4. et videnscenter samt
5. nye boliger for studerende i Lyngby.

Hvert projekt knytter sig til et enkelt emne. Dog knyttes flere af de andre respektive emner sig som subemner til et projekt, da der er et klart sammenspil og påvirkning emnerne imellem. For alle projekterne gælder det, at det er mennesket, der er i fokus. Det er menneskets oplevelser af funktion og nydelse, der forbedres for at fremme frivillige ophold i Lyngby.

Bogen her er samlet af Lærke Frier Ørgaard og Susanne Balslev Nielsen i december 2015.

God læselyst!

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1. Forbindelse

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I forbindelsen til DTU ligger der et forbedringspotentiale. Når kontakten mellem byen og DTU skal sikres samt forbedres for at imødekomme visionen om Lyngby som en vidensby, er der i projekterne i dette kapitel lagt fokus på den fysiske kontakt og forbindelse mellem Lyngby station, Lyngby centrum og DTU. Fælles for projekterne er fokus lagt på at gøre adgangen til DTU samt gøre vejen til DTU til en oplevelse. Fem af projekterne fokuserer på en bedre og nemmere ruter for bløde trafikanter. Der gives ideer til super cykelstier samt attraktioner langs ruten, der skal vække cyklisterne interesse såvel som lokales i om-rådet. Attraktionerne spænder fra interaktive legepladser, der repræ-sentere DTU til rekreative områder med blomsterhaver. Et projekt fokuserer på at gøre bustrafikken mere attraktiv ved at oprette innovative busskure. Der er fokus på hvordan busskure kan give en bedre viden om DTU samt om Lyngby for den ventende. For alle projekter gælder det at ruten til DTU skal gøres mere attrak-tiv, effektiv samt styrke forbindelsen mellem by og universitet.



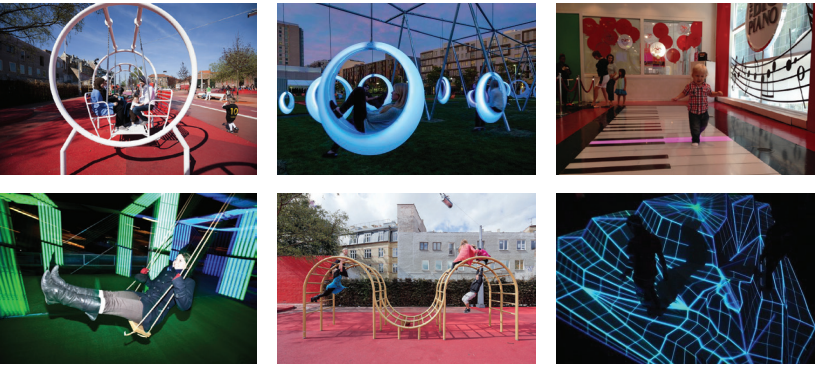
CONNECTING LYNGBY AND DTU

PROBLEM STATEMENT

- Two divided cities
 - Citizens not aware of DTU
 - Students are not involved in Lyngby
 - No clear image of the City of Knowledge
-
- Improve existing infrastructure
 - Green corridor
 - Add recreational areas
 - Create interactive strip
 - Redesign core of campus
 - More appealing
 - Wall of Knowledge
-
- Unified City of Knowledge
 - Improved accessibility to DTU
 - More interesting campus

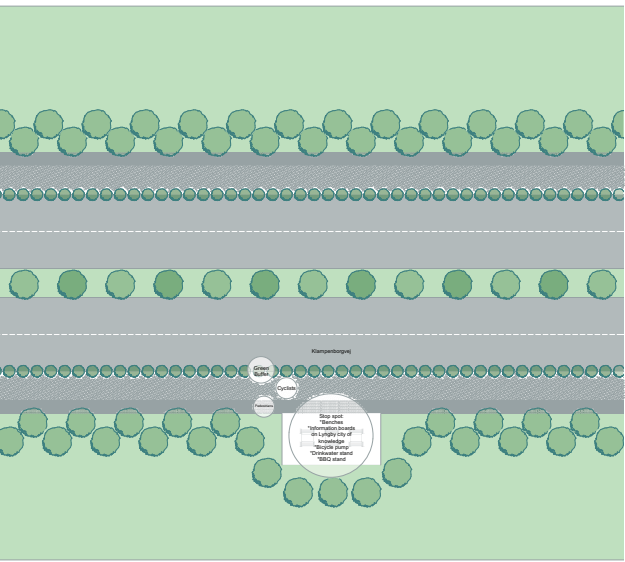
INTERACTIVE STRIP

Interactive playground in the spirit of the City of Knowledge, presenting each DTU Faculty. Open for everyone.



IMPROVING EXISTING CONNECTION

Upgrading existing bicycle and pedestrian lane to ensure a safe green connection to DTU. Recreational stops along the road, providing facilities to attract Lyngby citizens and make them aware of the City of Knowledge.



Group 19 Iris Eestilä s146139 Isabel Eslava s146335 Simon Svensson s102950 Vincent Van Kerckhove s142503



THE WALL OF KNOWLEDGE

Long wall going through the campus. Providing a medium to represent the different nationalities, communicate with students and allow them to express themselves; while adding an icon to the DTU campus that can attract non-students.

THE KNOWLEDGE PATH

- GROUP 12

Greenhouse gas emissions, air pollution, noise and other significant environmental impacts are caused by intensive transportation. Sustainable transport systems have a positive influence on the sustainability. Cycling is one of the most sustainable ways of transportation. It is a wish to make a better connection between Lyngby city centre and DTU to pull the public towards DTU, and the students towards Lyngby city.

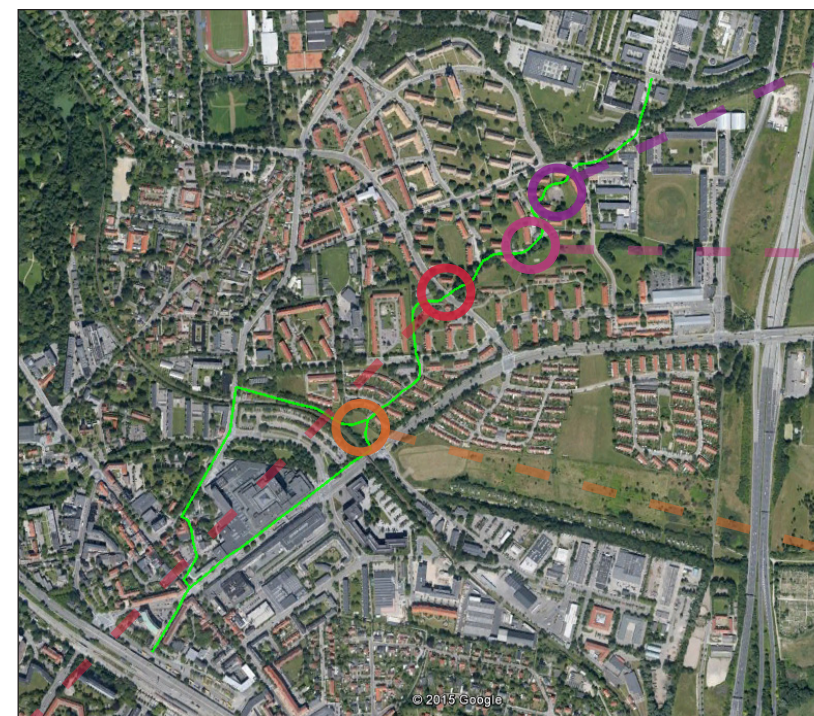
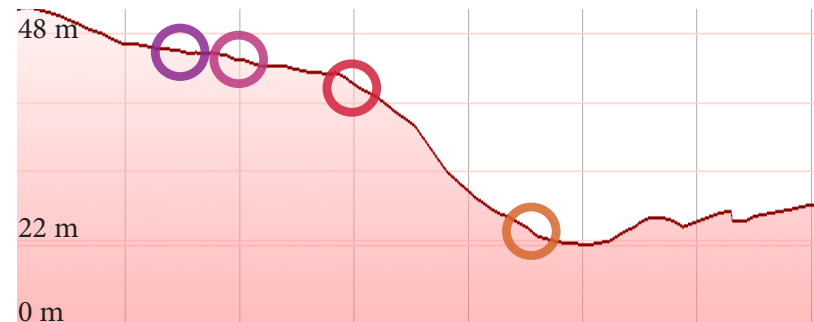
Building a new and modern bicycle path in Lyngby will help educate travelers, increase awareness, and build appreciation of our natural, cultural, historical, and environmental resources.

GOAL

Integration of two nerve centres of the city with a fast, comfortable, safe and direct bicycle path.

VISION

Super bicycle path connecting DTU and Lyngby city will not only promote cycling, but also integrate two places making them more sustainable and attractive.



DESCRIPTION

The bicycle path with pavement will meet technical principles of *Super Bicycle Path*¹. It will cross four *Green areas of knowledge* with temporary and permanent exhibitions from four original engineering fields of DTU – mechanical, chemical, electrical and civil. There will be a possibility for the companies to present their works or events related to the four fields. Every exhibition spot will have a person from DTU, responsible for the management of the area, selection of the exhibits, etc. At the end of every new semester the areas will be renewed with new works related to the specific field. Besides that, as the comfort of the cyclists has the highest priority, each spot will have bicycle repairing tools, benches, Wi-Fi, sources of water.

FACTS

Width: 3 m bicycle path, 1.5 m pavement

Length: 2 km

Elevation: 26 m

Special conditions: Difference in level, one heavily trafficked road to cross

End-points: Lyngby Station and DTU

Mid-points: Microsoft and Lindegård School

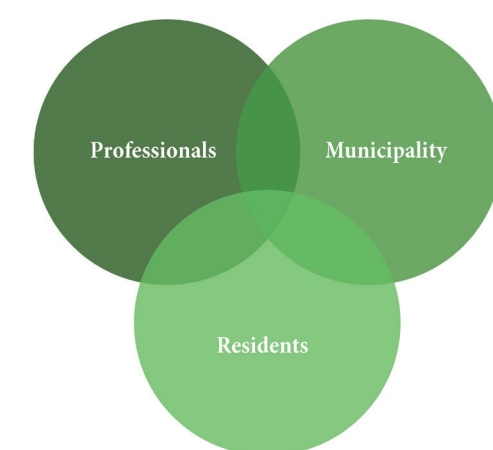


FACILITY MANAGEMENT

The municipality is responsible for the daily maintenance and cleaning of the areas around the path while DTU has the responsibility of the exhibition and to replace it twice a year at the end of each semester.



STAKEHOLDERS



CONCLUSION

The knowledge path has the potential of integrating DTU students with the inhabitants of Lyngby and creating an insight to the work of DTU students. The path creates a safe and direct route between DTU and the centre of Lyngby while it meets the standards of modern super bicycle paths.



Reference 1: Principper for cykelpendlerruterne, COWI, June 2010

LÆRKE-PHILIPSEN-S093375 KIRSTINE-LYNGSØ-DAHL-S102921
JAKOB-SKOVGAARD-S112842 UGNE-KRIKSTANAITE-S141606

42273 URBAN PLANNING AND SUSTAINABLE URBAN DEVELOPMENT
DEPARTMENT OF MANAGEMENT ENGINEERING

Lyngby has been known to be the a green area, which has become the city’s signature feature through the years. In fact, the area is green. But, inhabitants partly are critical towards change, which Lyngby is currently dealing with. Besides that, Lyngby is currently lacking an interaction between its stakeholders, which mainly are represented through inhabitants and students of DTU. Additional urban actions shall enhance stakeholders to get in touch for a livable, vibrant city.

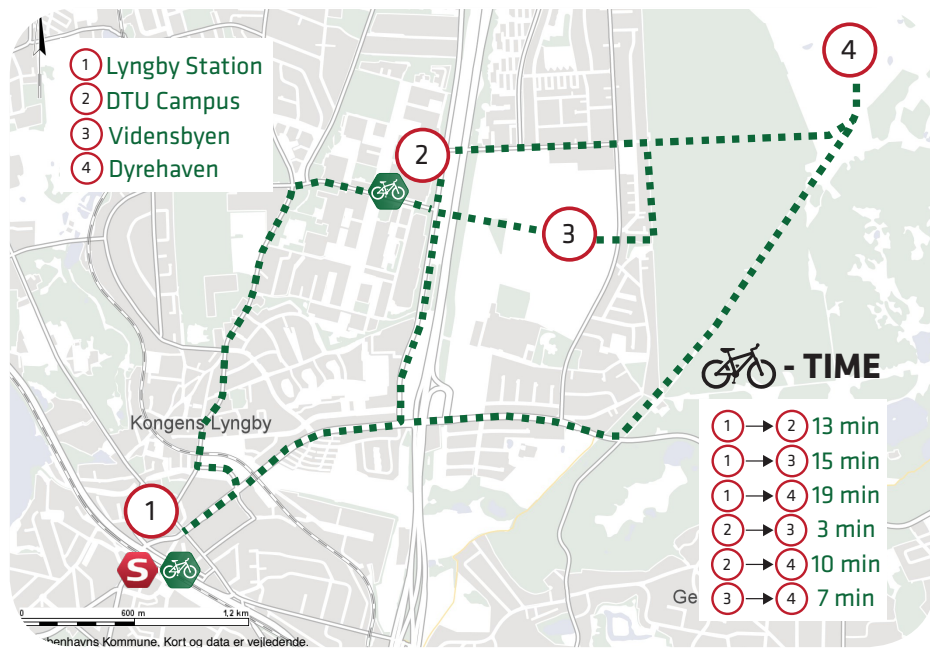
GREEN VEINS aims at making the inhabitants aware of their green surrounding and sustaining the green urban development on an environmental, social and economic level by connecting them in these three fields of intervention. The balance between work, life and leisure shall make the commune a hub that is able to keep up and increases the quality of life for all its inhabitants independently from background, education or age.

Green Veins

Conceptual development for a sustainable Lyngby

Team 18:
S140693 Frederike Krinn , S117398 Sarah A. Hamid , S125206 Mantreh N. Heydari , S125206 Sara Anne-Sophie Sakhat

Green Veins Map



Lyngby Leisure Path

The idea behind the leisure path is to connect the existing and the upcoming initiatives in the area through sporting activities. It is planned to have different facilities at the hotspots around in Lyngby, which support the existing initiatives like "Leisure in Lyngby". This leisure path would be one of the initiative, which is a 5km running path that circulates around DTU Campus.

The challenge is in making people bike, run or walk through the path instead of taking the car or the public transportation, but also to inform and attract the people of Lyngby inside the campus. Creating running and biking events for the community will open up the campus for the surrounding community and other users. For the same reasons the community would be allowed access to the existing fitness facilities. Sports is an activity that brings people together no matter ones background, and this is the goal behind the initiative.

To make the hot spots more visible, some maps will be placed around, to show where 'the veins' could lead them, as for example the cafe, park, market etc. The whole area will be transformed to a community hub where people have a lot of opportunities, and in that way attract different people to the area. There will be space for different sport activities and at the same time room for cultural, art and learning activities. This will help to achieve a connected Lynby.



Source: Anna Boez, Underline Park

Lyngby City Bikes

Introducing Lyngby City Bikes clearly points at increasing the interaction between different stakeholders and raises awareness of the qualitative green area Lyngby consists of. This supports the local initiatives of the City of Knowledge and Urban Development of green mobility and future-oriented concepts for bikes and additional means of transportation which are CO2 neutral. Furthermore, the Lyngby City Bikes encourage students, workers, tourists and inhabitants to flexibly cycle around Lyngby and its wonderful surrounding and vibrant places with interactions taking place whenever they spontaneously need a bike.

The concept is based on simple principles, which make it easy accessible not only for local people but also for occasionally appearing tourists. Here, Lyngby central station, DTU Campus, Eremitageslottet and Vidensbyen are the first ones to install those stations. Mobile Pay, Registration and payment through credit card will make facilitate intuitive use of the bikes. Not only students of DTU can enlarge their area of interaction and get to know Lyngby-Taarbaek much better and its green surrounding, but also workers, tourists and inhabitants. This is especially attractive for people working on a project basis who don't own a bike in the city. Cycling to the main station in the evening in additions invites people to go for a sundowner to DTU green roof cafe to let the day fade away, go for a lecture or just an after work with a view towards Dyrehaven. This might remind the one or other of the green veins.



Source: newzealand.com, Biking



Source: Technical University of Munich, Vorhoelzer Forum Roof Top Cafe and Lecture Hall.

DTU Interaction

The interaction between DTU and its surrounding neighbors is believed in need of improvement as both parties can benefit from the situation. The goal for DTU is to achieve awareness and presence of life on site from other people then just students and employees, and for the neighbors to have a meeting point for social recreation and interaction. In order to achieve such a result, it is necessary to attract people into coming to the location and entertain them to make them stay and eventually encourage them to come back again-maybe on a Lyngby City Bike.

A Cafe is a space of a vibrant, lively surrounding bringing people together for social activities as casual communications. However, a cafe can also be more, as for instance a space where one can gain knowledge and exchange knowledge. The cafe will host special events, where companies, organizations, and speakers will be able to rent the place with purpose of teaching and sharing knowledge as well as exhibitions. Thereby, interaction between stakeholders from different backgrounds is enhanced.

Flea markets are events taking place on weekends, where people come to sell their belongings or to make a good bargain. It is a social event that brings people together. Often these kind of markets take place in public space or parking lots. Luckily, DTU campus has plenty of these spaces which are empty during weekends. The location is therefore perfect this social gathering. With this kind of attraction an economic and social aspect is also present when arranging flea markets.



Source: EBS Consultants, garden-village-apartment, Green roof

Green Roofs

The green surrounding Lyngby has become a signature feature for the city itself. Constant change and new challenges in the field of city development demands new, sustainable solutions in the field of environmental aspects and keeping the city green. Green roofs is an enormous chance of contributing positively to CO2 reductions thereby opening the possibility for new possibilities regarding sustainable solutions.

An environmental friendly water handling system for the emission of rainwater to the public net which either supports the existing traditional drainage system or replaces it is a goal, that is also aimed at by the Vidensbyen network. Establishing green roofs tops to the Vidensby on the existing roofs in and around Lyngby will make the city achieve a sustainable drainage system. Furthermore by establishing green roofs it will help bring more green areas to Lyngby and to bring nature into the urban landscape and remain green veins.

A green roof is used to store and withhold rainwater thereby reducing over taxation of the public drainage system. However green roofs also contributes to a healthy urban environment because it absorbs the pollution in the air and also absorbs sounds. Green roofs also help to improve the urban life by creating gardens which can be used by the public for planting herbs, flowers or fruit plants or simply for creating courtyard environments with benches on the roof terraces which are open to the public to interact.



GROUP 13 - Mari Ohuchi, Tobias Molich, Lærke Bjerre

GOALS AND VISIONS

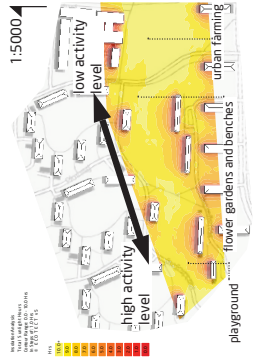
- Visible initiatives towards Lyngby Knowledge City
- Direct signposted bike path from DTU to Lyngby City
- Relations between citizens in Lyngby City and people using DTU
- Physical activity in the green residential areas between DTU and Lyngby



ANALYSIS

A biking lane of 1900 m reduces the mental distance and connects the city in smaller distance steps with attractive urban spaces along the track [1]. An action radius of 500 m is suggested as maximum distance between the areas [2]. The analysis shows the average daily sunlight potential throughout a year. In areas with high sunlight potential it is convenient to address initiatives with lower activity levels mainly labelled for an elder audience, whilst a lower sunlight potential invites initiatives with higher activity levels.

MICROCLIMATE



PERSONA



"I look forward to participate in the flower gardens and enjoy the new benches in the sun in Parkhøjen." Marianne, 76 years. Lives at Sorgenfrigårdsvej.



"My family and I will benefit from the project with a new, more safe and direct path between home, school and workplace." Thomas, 45 years, lives at Bækkevang.



"I bicycle every day from Lyngby Station. It will be great with a more visible, direct bike path to DTU." Kristian, 23 years, lives in Valby, Copenhagen.

FACILITIES ALONG THE LANE

- internationalization strategy [3]
- bike parking facilities
- information posts
- wind breaks
- clustering [3]
- benches
- lighting



- roller skating race
- urban farming
- rose garden
- petanque and kroff championships
- playground
- weekend markets

CONCLUSION ON SOLUTIONS



INITIATIVES ALONG THE TRACK

- Bidirectional path
- Signposts at all crossings
- Km-sign posts
- Green wave
- Orange-coloured

CROSSING AT SORGENFRIGÅRDSVEJ

New signalised junction with green light countdowns. [4]
Extra countdowns 200 meters before from each direction.

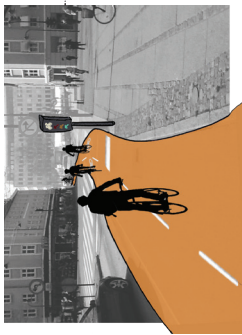


CROSSING AT LYNGBYBYGÅRDSVEJ

Only extra signposts informing about the crossing for both road users and bike path users.

CROSSING AT LYNGBY HOVEDGADE

New traffic lights enabling the bike path user to cross Klampenborgvej direct between Lyngby Torv and the bidirectional path at the northern side of Klampenborgvej.



RECREATIONAL AREA

- Facilitate activities in different levels to suit all audience segments.
- The area towards east suggests farming as there is a huge sunlight potential.
- Social games such as petanque and kroff gathers people at events.
- In weekends the area serves as facility for markets or exhibitions.



COMMUNICATION AND SUSTAINABILITY

- Socially sustainable by lowering the mental distance between DTU and Lyngby city. Green areas invite different levels of activity.
- Environmentally sustainable shifts the transportation mode from private car use to bike. [5]
- The strong orange colour communicates the path as well as increasing safety at crossings.
- Opening ceremony or introduction to the intended users and the citizens of Lyngby.
- Integrated planning strategy based on participation.

FACILITY EXCHANGE

- Asphalt testing projects //DTU Civil Engineering
- Water quality testing at Kanalvej //DTU Aqua, DTU Environment, local schools
- Testing of green wave techniques //DTU Transport
- Wind comfort measurements //DTU Windenergy

References: [1] Fenton, Mark, Battling America's Epidemic of Physical Inactivity: Building More Walkable, Livable Communities, Journal of Urban Health, 2005 [2] Gehl, Jan, Life Between the Buildings: How Public Life Shapes the City, 1997 [3] LYNGBY Knowledge City, 2014 [4] Videnby, 2014 [5] Kopenhagen Kommune, Copenhagen Design Co. & Mobymon, Servicekatalog Supercyklisten [5] Kamga, Camille, Emerging travel trends, high-speed rail and the public re-invention of U.S. transportation, 2014



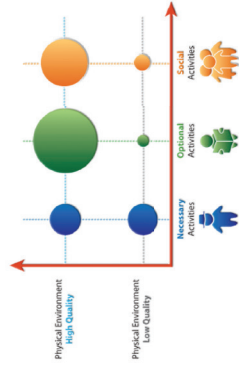
Lyngby-Tårnbæk: How can we change “waiting for the bus” from a necessary activity to an enjoyable and sustainable one?

Andrew James Unander S146353 - Bingxin Ji S130648 - Caroline Deuse S146562 - Florence Alexia Bohnes S141069
 DTU Management Engineering
 Department of Management Engineering

INTRODUCTION

In the Lyngby-Tårnbæk Knowledge Center, one of the key goals is to forge a connection between the university, residential areas, private companies and the municipalities. The members of the association are actively seeking ways to make these connections and involve each other in partnerships. However, an important aspect to remember is the physical connection between the places where each party occupies. In order to improve and ease this connection, while creating a better user experience, a revamp of the bus stops is proposed.

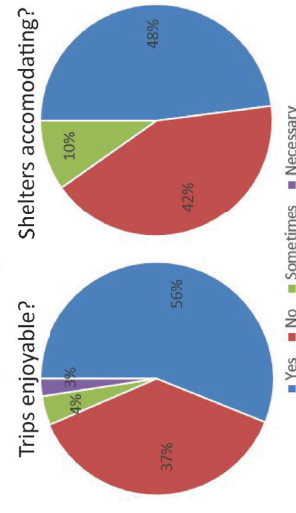
TYPES OF ACTIVITIES



There are three categories of outdoor activities: necessary, optional and social activities. Urban quality has a large influence over the amount of time citizens will spend in a space. In the matrix, the larger circle represents more time spent doing that activity. In our transformation of the bus stops, we are trying to create a space that not only provides for the necessary activity of taking the bus, but also offers optional activities (ie. reading about a sustainable life, planning one's route) and social activities (ie. sitting and talking with friends) with its features.

SURVEY RESULTS

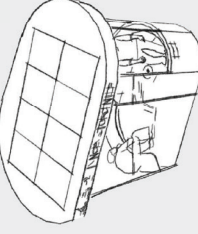
- Average waiting time in Lyngby station = 12 minutes
- 1/2 of the respondents asked for better shelters (protection against the weather and benches)
- Other suggested improvements: something interesting to read, screens with waiting time, time-tables, wi-fi, phone chargers, ...



ECO-FRIENDLY

ENERGY

→ 2m² of photovoltaic panels are installed on the roof and will produce a minimum of 2000 kWh/year (data for Denmark)
Why? The bus stops are **highly energy positive**, as the only energy consumption is for the screen and the light (around 400 kWh/year)



INFORMATIVE & INTERACTIVE

INDICATIONS

- The name of the bus stop is written with large and clear letters
- The top of the shelter is painted with different colors
- Why?** Users, including foreigners and non locals, **find their way more easily** and get out of the bus at the right station

SCREENS

- Different types of screens are installed depending on the size of the shelter:
- Advertisement poster + small screen with waiting time
- Simple screen with constantly up-to-date information like connections, delays and weather
- Tactile screen that allows interactions with the users as finding their way via Rejseplanen and navigate on the network
- Why?** Trips are **easier and interactive**

INSTRUCTIVE

ADVERTISEMENT

- Advertisements about sustainability are presented through the screens or posters dealing with recycling, transportations, pollution, etc.
- Why?** Give advices about **how to make people's life more sustainable**

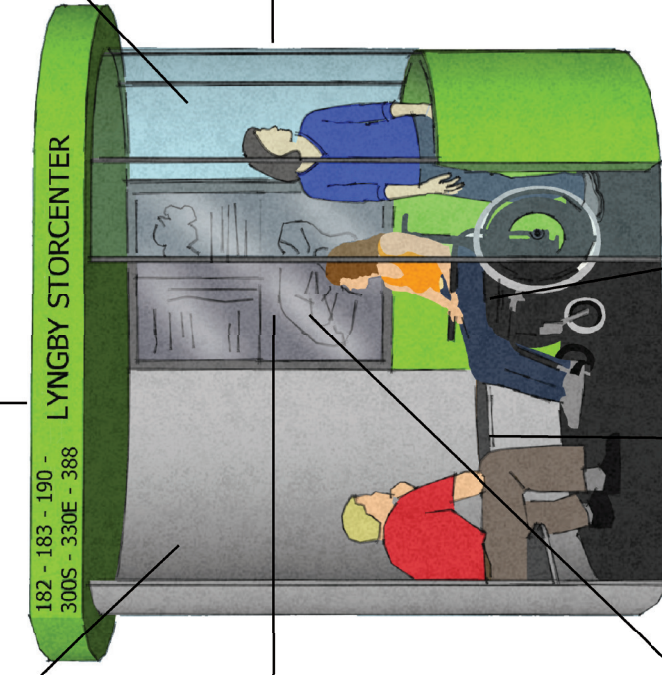
SOCIAL PLACE

- Round benches
- Why?** **Social interaction** are simpler between people traveling together, and **elderly or disabled can sit**

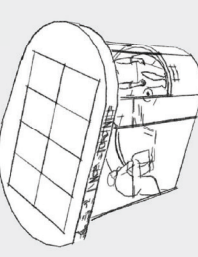
ACCESSIBILITY

- Large space inside the shelter
- Why?** Disabled people and strollers have **enough space** to also be protected

SOCIAL INCLUSIVE, APPROPRIABLE



182 - 183 - 190 - 300S - 330E - 388
 LYNGBY STORCENTER



PRACTICAL ASPECTS

- The shelter has a roof and is quite closed
- The left part of the shelter is transparent
- Why?** People are **protected from the rain and the wind** while allowing them to see their bus coming

COMFORTABLE

FUNDING

- Estimated cost of one bus stop: DKK15,000-18,000
- To lower the price, companies who agree to supply materials, screens and solar panels for free or with discount will have their name advertised on stop
- Local companies (ie. Mirosoft, Dong) can sponsor full bus stops with personal design but need to adhere to certain key design regulations
- Sponsorship can connect private companies to community in another way



STOPS MISSING SHELTER

- Within the section represented in the map, 27/72 (= 37.5%) stops do not have shelters
- In total, there are 23 unique bus lines with 280 bus stops that run through Lyngby
- Average number of rainy days in Copenhagen per year: 171 (= 47%), making shelters essential



I am freezing! If it rains today, I will get soaked...



Waiting for the bus is so boring...



There isn't enough space underneath the shelter.



How do I get to DTU from here?
 How will I know which bus stop to get off at?

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 http://www.folkecenter.net/gb/rd/solar-energy/pr-market/solercells_denmark/

2. Bæredygtig trafik

Projekt 2.1 Sustainable mobility in Kgs. Lyngby	9	<p>Et bæredygtigt aspekt på transport igennem Lyngby samt hvordan disse kan understøtte en bedre forbindelse til DTU er i dette afsnit belyst.</p> <p>I en generel betragtning ses der både på offentlig trafik og cyklismens muligheder for forbedringer til at blive en mere bæredygtig by med en bæredygtig trafik. Det skal være attraktivt for de studerende at transportere sig bæredygtigt til DTU. Derfor argumenteres der for, at det vil være mere bæredygtigt samt potentielt mere effektivt, at de studerende tilbagelægger dele af deres rute på (el)cykler. Flere af projekterne generer ideer, der har fokus på bycykler samt cykeltrafikken mellem DTU og Lyngby. Et gågade-potentiale belyses desuden, for hvordan byen hermed kan være mere attraktiv for mennesker samtidig med, at den er mere bæredygtig, da biltrafikken vil reduceres.</p>
Projekt 2.2 City bikes in Lyngby	10	
Projekt 2.3 DTU green line	11	
Projekt 2.4 Bykool	12	
Projekt 2.5 Lyngby's new walkabout 2016	13	
Projekt 2.6 Lyngby center street	14	

GROUP 2
s062661 Anders Højen Kristiansen
s117434 Andreas Willer Jørgensen
s113535 Anja Vinther Jakobsen
s141633 Christina Papadimitriou

Sustainable mobility in Kgs. Lyngby

Solutions to attract people and create a more coherent city

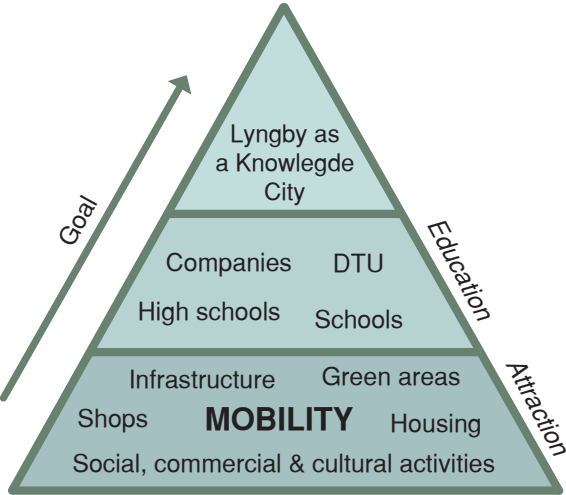
Scope of the project

The creation of "Knowledge City Kgs. Lyngby" has an important contribution from both big and smaller corporations together with the technical university (DTU), which are the main mechanisms for attracting educated people to inhabit Kgs. Lyngby. Social and commercial activities are also needed in order to attract people to spend more time or live on a permanent basis in Kgs. Lyngby. This way, a vibrant nucleus will be created, from which many people will take advantage and pleasure for various reasons (work, education, green areas, social life). For this achievement, it is necessary to have good, cheap, fast, safe and reliable mobility and transportation possibilities in Kgs. Lyngby.



Mobility

"Knowledge City Kgs. Lyngby" is expected to lead to an increase of population traveling inside or towards Kgs. Lyngby on a daily basis. Today around 3500 people travel everyday from the general Copenhagen area to Kgs. Lyngby to work. DTU has moreless 7000 students and 4500 employees, most of whom also travel everyday to Kgs. Lyngby. Moreover, residents of the area travel around the town or towards other areas. Therefore mobility in and towards Kgs. Lyngby is thought to be an important parameter to be investigated in the general goal of creating a sustainable and convenient community in "Knowledge City Kgs. Lyngby".



Transportation and a good infrastructure is a key factor that contributes to the generation of a dense and vibrant social network. By improving transportation opportunities towards and inside Kgs. Lyngby the city will be more coherent and thereby attract more people to come and/or live there. Better opportunities for various activities are expected to be generated and thereby different kinds of social life may exist for all types of people.

Silicon Valley can be seen as a role model for creating and sharing knowledge in Kgs. Lyngby. Silicon Valley has some similarities to Kgs. Lyngby and a lot can be learnt in terms of planning coherent and sustainable mobility in a knowledge center.



Approach

Our focus is divided into two categories: residents of the area traveling inside and around Kgs. Lyngby and people who travel towards Kgs. Lyngby every day to go to work or school. Improvements for faster, more convenient and sustainable mobility for both cases are suggested below. The different aspects aim towards various kinds of people and age groups, which have different needs concerning transportation to school/work etc. We hereby try to give suggestions on new/better transportation possibilities that can improve the daily life of all.

Inside Kgs. Lyngby

Rental bikes - "Lyngby bikes"

- Easy and fast
- Low CO₂ emissions
- Active lifestyle
- No maintenance responsibility
- Save money (no need for buying a bike)
- Less stressfull
- Moving easily around DTU campus

Special prices for transportation tickets

- Move around easily
- Cost reducing
- Social life improvement

Pedestrian streets / Walking paths

- Use green areas in a beneficial way
- Make unknown spaces visible
- Enjoy the nature
- Attract people to walk around the city

Frequent transportation and more stops in residential areas

- Easy and fast
- Smoother traffic flow
- Improve social life
- Short distances
- More people will travel around, also outside campus
- More people would use public transportation in their everyday life
- Good connections
- Night hours



Towards Kgs. Lyngby

Bike lanes / Super Cycle Highway

- Green wave (save time)
- Active lifestyle
- Tunnels instead of dangerous crossings (safety)
- Good connection to other cities



Light rail

- Attract people from outside Copenhagen
- Easy and fast transportation
- Transportation of many people at the same time
- Running on sustainable power

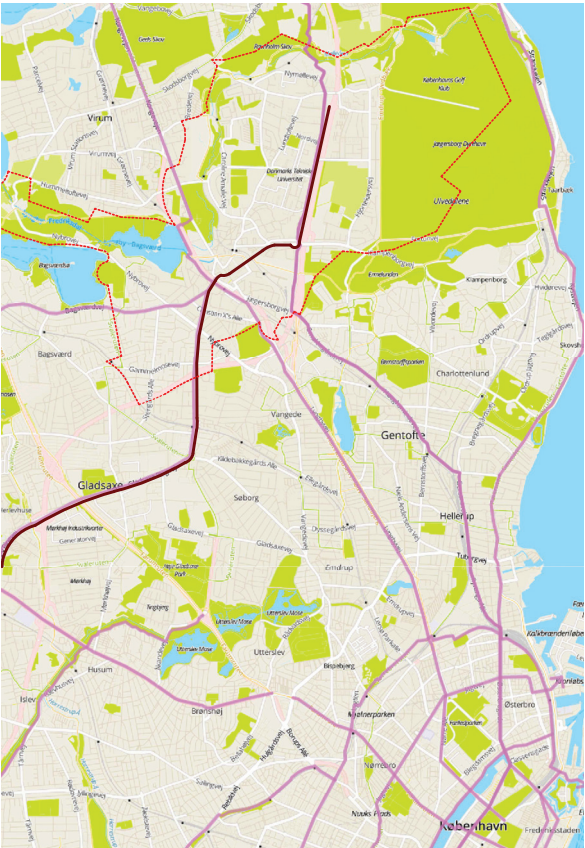


More night and direct buses

- Better connection to Copenhagen
- More departures = more people

The new transportation possibilities towards Lyngby

- The Super Cycle Highway
- The Light Rail
- The municipality of Kgs. Lyngby



Conclusion

We know that it is not possible to create the great city of knowledge by focusing on "one" thing. Various aspects have to be changed in order for the city to reach the goal, and it is hard to know where to start. We think that mobility and transportation possibilities in Kgs. Lyngby need some improvements, nevertheless changes are already in the right direction. Good transportation infrastructure and possibilities is a key point in order to attract and keep people in the area. It is a good starting point for the creation of a coherent and sustainable "Knowledge city Lyngby" but at the same time complicated given that many groups of people shall be taken into consideration while planning and great investments are needed. Combination of existing infrastructure (bike lanes, buses) with new mobility alternatives (light rail, super cycle highways, "Lyngby bikes") is the ideal approach to achieve the goal.





City Bikes in Lyngby

Anton Badman s142239, Christos Pekopoulos s142582, Hugo Riviere s141331, Christian Skov s093864

Implementing city bikes will make Lyngby more sustainable. It is widely known that bicycling is one of the most environmental friendly transport solutions. City bikes will also provide a healthy form of public transportation and will increase the environmental, social and economic sustainability. City bikes will also increase the accessibility of public transportation since the bikes can be used 24 hours a day, 7 days a week. The bike stations will be located in areas with higher demand such as: at main train and bus stations, universities and schools, residential areas and close

City Bikes in Other Cities:

- Currently more than 500 other cities have city bikes.
- Countries such as: Denmark, USA, Mexico, Canada, China, Netherlands, Sweden, Italy, France
- In Denmark Copenhagen, Aarhus, Odense and Randers have bikes.
- There are different types of bikes:
 - High tech electric bikes as seen in Copenhagen, with mounted tablets
 - Simple yet effective low maintenance bicycles as seen in Odense, Aarhus and Randers
- Different payment systems available:
 - Pay per hour, operated by private companies
 - Pay when you borrow the bike and you can use it as much as you want

City Bikes Will Make Lyngby More Environmentally Friendly

The city bikes is an environmentally friendly transportation solution. Some of the environmental benefits include: reduction of traffic congestions, promotes bicycling, reduction of air pollution and traffic related CO2 emissions. One example of environmental success is the city bikes in Paris, France where they over a 6 years period saved around 137,000 tons CO2 of emissions. Furthermore, data from France indicates a reduction of car traffic. In Lyon the car traffic was reduced with 7 percent since the launch of their city bike program, and 20 percent of the users in Paris is stating that they taking the city bike instead of their car (Lippelt, 2013).



UNLOCK
FROM ANY
STATION

RIDE
WHENEVER
YOU WANT

RETURN
TO ANY
STATION



Background Legend

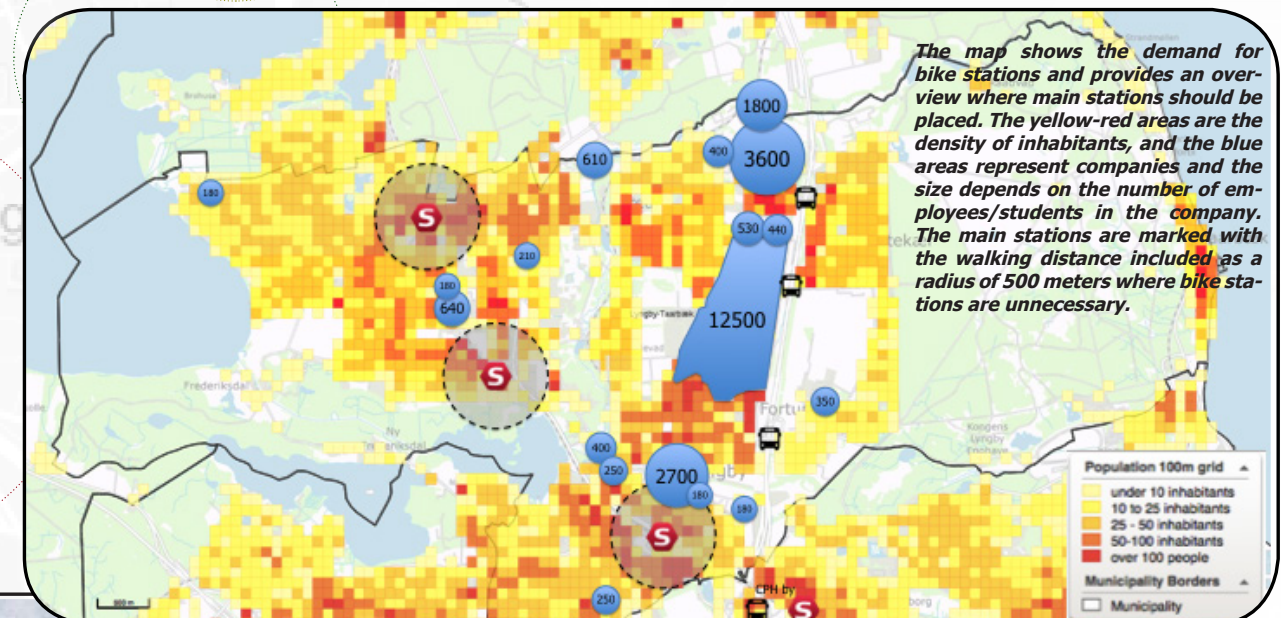
- Central Bike Station
- Residential Bike Station
- In-campus Bike Station

The Social Aspect of City Bikes

By implementing city bikes in Lyngby people will have:

- Higher accessibility and mobility in Lyngby
- Better possibilities of meeting friends and family
- Easier access to semi remote locations such as DTU
- Better integration of foreign students and employees
- Better coherence between Lyngby companies, DTU and Lyngby itself.

These benefits could be promoted through the creation of an annual city bike race. Such an event could make people get together and make Lyngby famous for its sustainable solutions. The bike race could furthermore be organised in collaboration with DTU or local companies.



City Bikes in Lyngby Providing Social and Economic Sustainability

A social maintenance programme has been successfully tested in Copenhagen in the late 1990s, and by applying the program to Lyngby, this can increase the social and economic sustainability. The program consists in recruiting and providing job training for unemployed people that stands outside the society and motivate them to carry out the system maintenance. This maintenance program will help the most vulnerable group and get prepared to get back into the job market. It will not only helping individuals through social inclusion, but this programme will improve economic sustainability by sharing expenses both from bike maintenance and social help (Miljøstyrelsen, 2000).



42273 - Urban Planning and Sustainable Urban Development

Departement,
DTU Management Engineering



BYKOOL

Bike sharing system connecting DTU with Lyngby



GROUP 3

s051902 - Anders LYHNE SØNDERRIIS
s103805 - Anna IL' DUTOVA
s142823 - Augustin BOUET
s141634 - Davide TONON

Problem

It is not always easy to reach DTU from Lyngby st.

- Dependency on public transportation increases commuting time
- Public transportation is expensive

Bike is a good way, BUT:

- Difficulties to bring bikes on the S-train (saturation, rush hours,...)
- Many international students do not own a bike
- Risk of bike theft

That's why a solution to combine the advantages of bikes, letting down the disadvantages, should be set up.

Bike theft Students Benefits Travel time



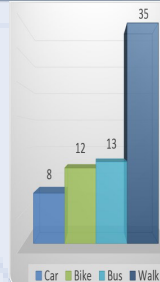
- 60,709 bikes have been reported stolen in 2014 in Copenhagen area



- 1000 international students per year at DTU
- Most of them live spread around Copenhagen



- The easiest way to exercise
- Reduces stress
- Improves heart health
- Increases muscle tone



Target groups



International students

Main target



Commuting students and employees

Second target



Lyngby citizens

General target



MAIN REFERENCES: DSB, Lyngby Municipality, DTU, Velib and BikeMi

Solution

How it works



- Available 24h/24h
- 7 bikes stations
- Low price
- Easy & fast payment system

Stations



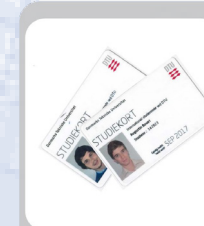
- 7 stations
- Lyngby St
- Lyngby store-center
- 4 stations in DTU

Price



- 10 DKK/day
- 70 DKK/month
- 250 DKK/semester
- 400 DKK/year
- 50% discount for students

Payment



- Student cards (for DTU students)
- Personal cards (other customers)

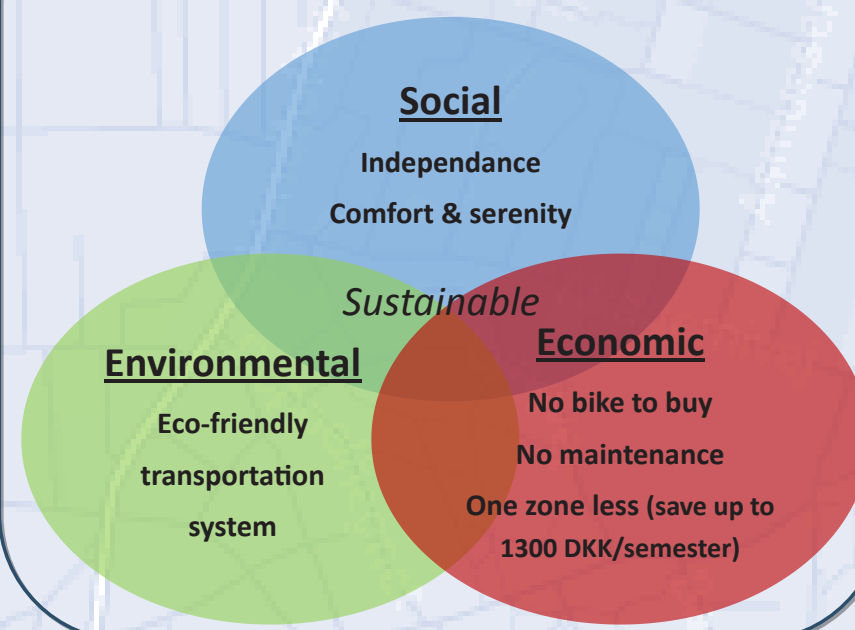
BYKOOL



LyngBY
+
BiKe
+
cOOL

Bykool Benefits

a sustainable service for the ambitious city



Stakeholders

DTU
Improve the students life



Lyngby municipality
City of knowledge



Engineers companies

Microsoft

COWI

HALDOR TOPSOE

Increase their visibility

Starting investment

Drawbacks

- Based on similar systems already existing, investment could be high (up to 30 000 DKK/bike all included)
- Incertain success (depth surveys should be conducted)
- Challenge to extend the target groups

LYNGBY'S NEW WALKABOUT 2016

LET US BRING THE CITY BACK TO HUMAN SCALE



GROUP 14

MARINE CAMILLE PERCEVAL, s141861

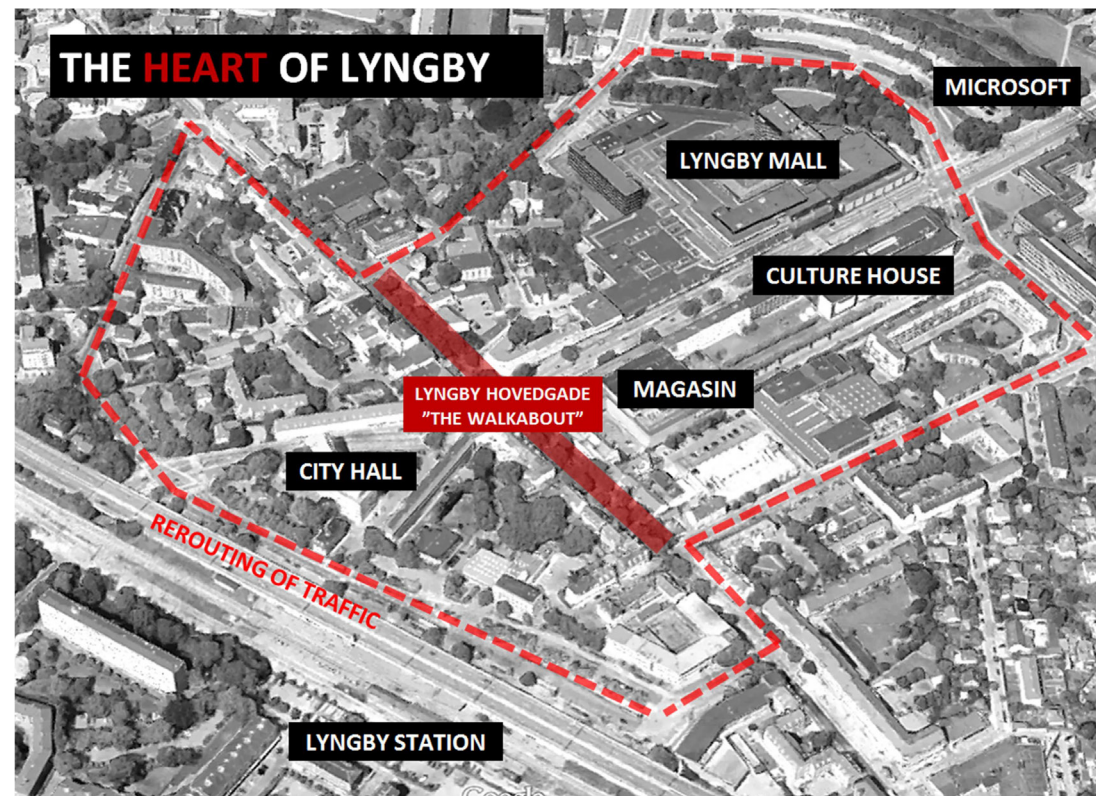
LEONORA M. LARSEN, s112910

ANN-ELISE DOS SANTOS GUSTAVSEN, s141552

YANNIK MELCHIOR, s142417

LET'S GO WALKABOUT!

Over the years Lyngby city center has become more and more overrun by traffic which hides away the beauty of the city. The municipality of Lyngby has a vision of rediscovering the city by creating a new pedestrian zone called "The Walkabout" to promote culture and urban life and make the city attractive to outsiders. We want to invite people back into the streets underneath the open sky instead of hiding them from the urban picture in the city's giant malls and give them back the human scale that the city miss.



WE ARE CREATING A NEW VIBRANT URBAN SPACE

- Create a place to meet by closing parts of the main street Lyngby Hovedgade
 - Bring the culture, shops and people back into the street
 - A space for new activities: market days, recreational, play
 - Make it "A green street"
- Keep the urban space clean: divided trash cans for recyclables
- Make life easier for the elderly, disabled and visually impaired by change the paving and street furniture

Do you have more ideas for the Lyngby Walkabout?! Please tell us:

THE STREET AS WE KNOW IT AND HOW IT COULD BE



FEEL INSPIRED BY OTHER CITIES



Copenhagen 1960s. Amagertorv



Copenhagen Today. Amagertorv

Closing the main street in Lyngby has been inspired by other cities who successfully closed their streets to accommodate future growth and encourage green spaces and a clean environment.

COPENHAGEN, NØRREBROGADE

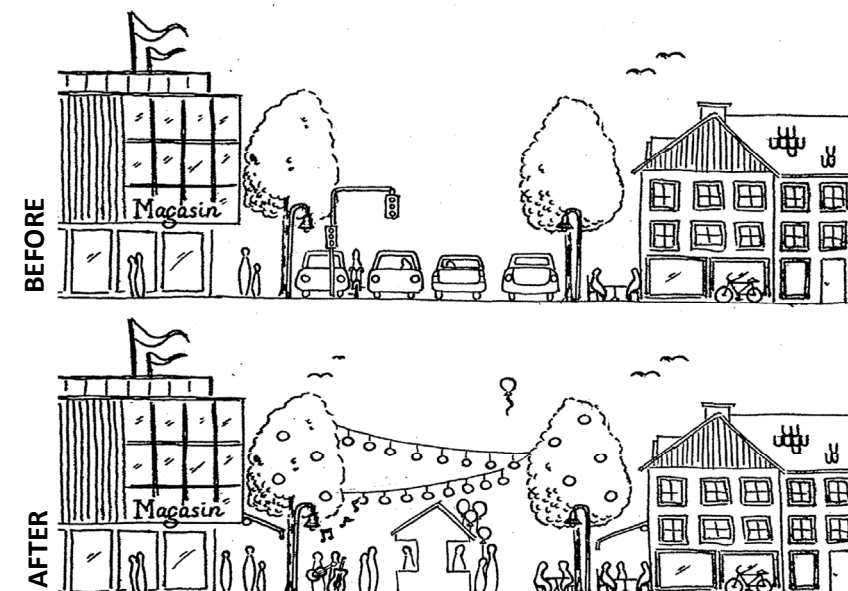
- 20 % increase in cyclists
- 45 % decrease in accidents
- 60 % increase in pedestrians
- After one year a decrease in traffic by 10,7 %
- Noise pollution reduced

LONDON, UK

London's West End becomes a traffic-free destination for people of all ages during 3 Sundays in the summer.

- Live music, fashion shows, food, exhibitions etc.

THE HUMAN SCALE



3. Videnscenter

Projekt 3.1 Science center Lyngby	17	<p>For at fremme bevidstheden om DTU, beskæftiger fem projekter sig med etablering af et videnscenter eller et vidensområde. Ved hjælp af forskellige attraktionsværdier, som f.eks. agrikultur tæt på byen med et videnskabeligt afsæt eller interaktive læringsmiljøer, gives der forslag til bygninger og områder, der giver et markant visuelt indtryk af en mulighed for vidensdeling samt naturfaglig læren med afsæt fra DTU. Med fokusområder på videnskaben dannes disse videnscentre, der for alle projekterne har til formål at tiltrække både borgerne i Lyngby-Taarbæk kommune samt de studerende.</p>
Projekt 3.2 Knowledge center	18	
Projekt 3.3 Synergy between Lyngby and DTU	19	
Projekt 3.4 New landmark for Lyngby-Tårnbæk	20	
Projekt 3.5 Lyngby's agriculture boulevard (LAD)	21	

Science Center Lyngby

Living & Enjoying Renewability

Why a Science Center?

Because the idea of Lyngby-Taarbæk as a “City of Knowledge & Urban Development” requires to...

- make Lyngby more sustainable by developing renewable energy solutions.
- provide residents with information about sustainable energy solutions for their homes.
- establish a network between e.g. residents, municipality, companies, tourists, students and researchers.
- combine DTU campus and the urban life in Lyngby.
- establish a connection between local companies and relevant researchers.
- give tourists more reasons to visit Lyngby.
- create a fun and inviting learning environment

If you want to know more

s146975 Stephanie Salling
s142236 Sebastian Pofahl
s123713 Mikail Güngördü
s061405 Jean-Paul Kapuya

References

- The Otto Bock Science Center, Berlin (<http://www.ottobock-group.com/en/science-center/> - the center used for illustration)
- Lyngby-Taarbæk City of Knowledge & Urban Development (<http://www.vidensby.dk/English.aspx>)

Students

- Interdisciplinary thesis/project topics (KU, CBS, DTU, ...)
- Company cooperations

Researchers

- Input (students, residents...)
- Cooperation with companies
- Small lab for “shows”
- Research planning

Residents

- Receive information
- Advice for own homes
- Propose ideas

Tourists

- New experience
- Vacation and learning
- Nice area (Cafes, parks, shopping...)

Schools

- Learn about renewable energy
- Information about educational opportunities

Businesses

- Cooperation between companies/researchers
- Exposure

Municipality

- Coordination/cooperation of input
- Providing information

What makes the Center?

- ✓ A green, welcoming entrance with reception
- ✓ An interactive exhibition
- ✓ A public café
- ✓ A laboratory
- ✓ Offices
- ✓ Meeting rooms
- ✓ Access points to online platform with e.g. guides, maps, calendars, events, competitions, fairs

What are the benefits?

- All stakeholders benefit mutually from each others' input
- Location in Lyngby center ensures easy access for all parties involved
- Ensuring continuous development in renewable energy sector
- Possibility of attracting future partners (e.g. universities, companies)



Department of Management Engineering
Technical University of Denmark

Sustainability

Economic

Social

Environmental

What

A learning and activity center that will engage people to become more SUSTAINABLE. So the knowledge center in the integrated way teaches, how to be sustainable. It does it in a fun way with a lot of interaction.

Why

In order to have a sustainable city with knowledge and to improve the social interaction in Lyngby-Taarbæk municipality.

Who

The IDEA is to share knowledge among citizens and families, from students, companies and professors.

4E



Education



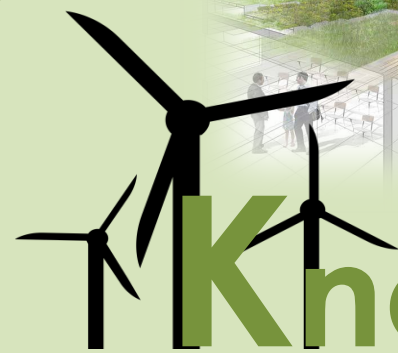
Experiments



Exhibitions



Eco food



KnowledgeCenter

– Engage in your own future –

Location

Location 1: North from DTU campus, there is a calm forgotten green field with a possibility of a new building or renovation of an old warehouse.

Location 2: On the south side of campus there is an area closer to Lyngby city, offering a lot of space and possibilities.

Location 3: Just behind the Lyngby Storcenter, there is a grey parking lot and a big green field.



Are you a student, family, scientist or company?

Join us when we explore and share **knowledge** in an inspiring environment

Group No. 7

Eva Zavrl (s131705) MSc. Architectural Eng.

Kjersti Fosso (s142584) MSc. Architectural Eng.

Linea Sofie Skov (s113322) MSc. Environmental Eng.

Jakob Bommersholdt (s092835) MSc. Transportation and logistics Eng.

Syngergy between Lyngby and DTU

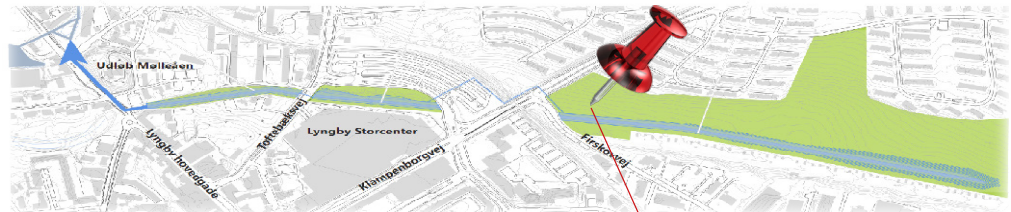
Can interaction lead to sustainable development



Attracting students to the city

Lyngby has a very popular city centre with many different shops. Many students are just transporting themselves through Lyngby without shopping. Furthermore the resident students only use Lyngby occasionally. This could be improved by:

- Food festival hosted by students
- Concerts
- Reopen the fortified canal
- **Knowledge Center**



Knowledge Center

The idea is to create a building serving the students and the citizens in a new Knowledge Center located by the new fortified canal. The building features:

- Study room
- Cafe
- Free access to computers (DTU)
- Lectures (free)

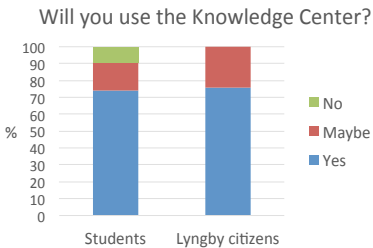


Benefit:

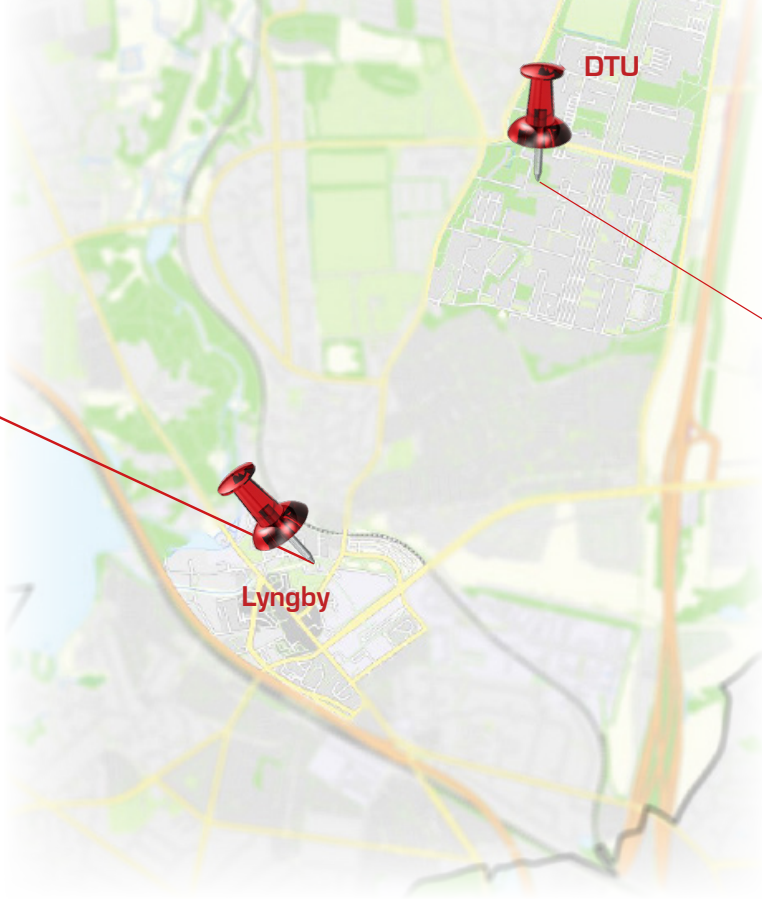
The purpose behind the new facility is to create a more social environment around the center of Lyngby for the students and the citizens. When creating the building, the focus is to make it CO₂ neutral and limit the consumption of the ground water by making it water neutral. According to the questionnaire 74% of the students will use the new facility downtown rather than stay at DTU. Furthermore 76% of the citizen will also make use of the facility.

Economy:

By creating a new multifunctional Knowledge Center with an image of DTU the building is created based on the newest technology. Cost around DKK 200-300 million, which is realistic compared to the price tag of the 'Black Diamond' in Copenhagen.



A sectionmap over Lyngby Municipality



FACTS:

DTU - 10,000 students
- 5,000 staff

Lyngby - 54,000 citizens

Attracting citizens to DTU (activities at DTU)

The purpose is to utilize the potential DTU has:

- Workshop area
- Events (concerts, free lectures, movie nights)
- Union events
- **Innovation lab**



DTU Innovations Lab

The biggest playground for engineers costed around DKK 25 million. Skylab is popular on DTU and it helps students to make dreams come true. Right now only students are using the facility.

Benefit:

There are already some projects that made it out of the lab and into the market. If more students and citizens would use the new Lab, the projects could result in patents, where DTU are the founder.

Economy:

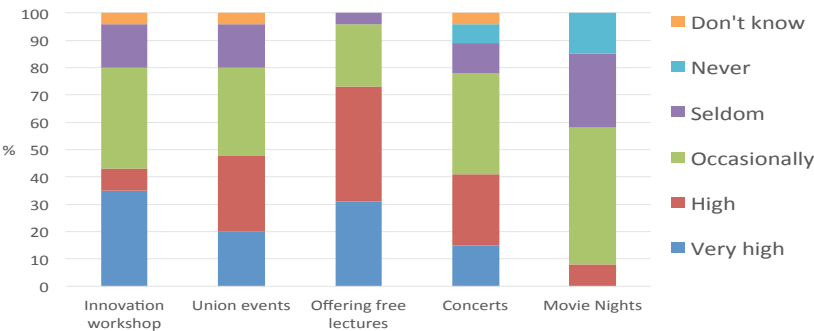
DKK 20 million to expand and buy more equipment and tools for the Innovation Lab, but if some companies are interested, these companies could help DTU with funds, which in return could improve their reputation.

Summary

This project has its focus on the syngergy between DTU and the city. This interaction process is time consuming and needs an active participation from DTU and Lyngby.

The idea of implementating a Knowledge Center and Innovation Lab are backed up by the respondents' opinion through a questionnaire.

Preferences for using DTU



New Landmark for Lyngby-Taarbaek: The Knowledge Centre

Lyngby-Taarbæk City of Knowledge & Urban Development strategy aims at developing Lyngby into a world-leading center of knowledge. In the future academic institutions and private companies join forces to make Lyngby-Taarbæk more attractive both for its citizens and for the people who come to the city for work or leisure.

WHY

1. Strategy is focusing mainly on science and high-tech companies. It misses integration to everyday life
2. Lyngby has a single-zone urban plan where different functions are at different locations (work, dwelling, shops...)

Objects:

To build an **authentic and lively** area attracting the three core stakeholders of Lyngby-Taarbæk City of Knowledge & Urban Development:

1. High-tech business people
2. Students and Science
3. Residents and Public

→ **International architectural contest** for designing Knowledge Centre area and *gain attention*



WHERE

With 6 out of 27 stops located within the Lyngby-Taarbæk Municipality, the planned Ring 3 light rail (opening in 2020) will increase accessibility and provide a new green corridor between Lyngby Station and DTU campus. New opportunities for sustainable development could be located along the corridor: the identified project consists in the refurbishment of the intersection area between Klampenborgvej and the Helsingør Motorway, corresponding to the new station of **Lyngbygårdsvej**.

Features:

- Visible landmark that could be associated to DTU
- Location between DTU and Lyngby center and natural meeting point for the two realities
- On exit 16 of the Helsingør Motorway
- Residential areas and citizens living right around the corner

WHAT

DTU meeting hall

One exhibition week a year for every DTU department
Conferences, concerts, private events
Open for everyone, open area

Grocery stores

Local residents don't have a grocery store right around the corner

Market area

Open space for local producers' market, weekly/monthly events

Study and working cafés

Modern working areas and attractive learning environments

Retail stores

Company offices

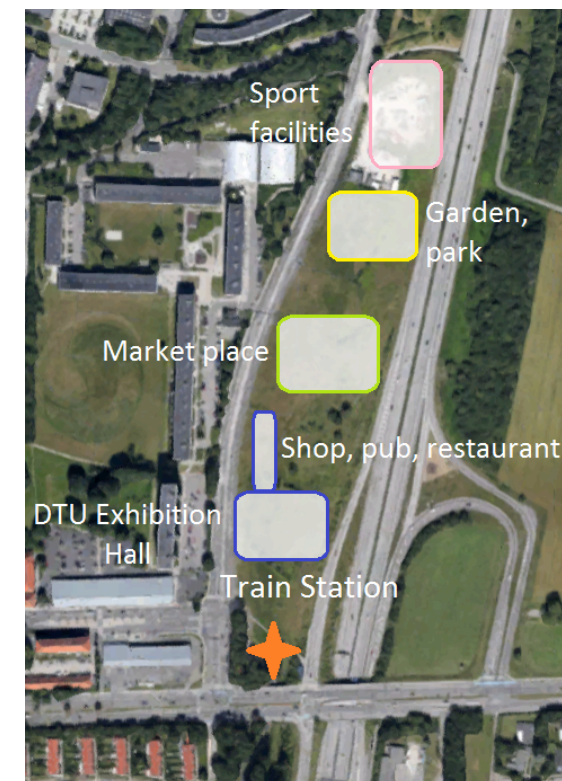
Companies could also have open showrooms

Restaurants

Future working places bring more employees, students, citizens

DTU Brewery Bar

Learn the arts of beer brewery by a DTU pint



The Need for Large-Scale Urban Food Solutions is Profound

By 2050, the world's population will increase to a total of 9 billion people, with 80% living in urban areas. Urban populations rely almost solely on external sources of food and are thus vulnerable to disruptions in supply chains. This vulnerability is likely to increase with population growth and the increasing effects of climate change. Urban agriculture (UA) is seen as a viable solution to meeting these current and future challenges.

What is Urban Agriculture?
Urban agriculture (UA) is the practice of cultivating food crops in or near urban centers. Using innovative technologies, such as land maximization (multilevel greenhouses), intensive growing techniques (aquaponics etc.), process synergies and nutrient conservation, urban agriculture can provide a environmentally-friendly, cost effective, year-round supply of fresh organic produce to any city in the world.



The Concept
Develop the world's first fully sustainable urban agriculture production and research precinct. Named Lyngby's Agriculture Boulevard (LAB), it aspires to be the epicentre of innovation and technological advancement in enabling cities to generate a complete local food supply.



- Key strategic targets of LAB:**
- Leader in agricultural sustainability
 - Deliver world-class research, education and pioneering technologies
 - Increase partnership and collaborative research with international partners.
 - Promote Danish organic food and become a net exporter of fruit and vegetables.
 - Promote the integration of UA into in city planning and building design
 - Showcase Lyngby as a living laboratory and model of sustainable development
 - Provide education and heighten public awareness of food security issues

- Economic Benefits**
- Opportunity to develop a new production and service economy.
 - Job creation and indirect economic stimulus to local area.
 - Effectively eliminate agriculture transportation costs and the loss of spoiled food.

- Environmental Benefits**
- Minimize further land clearings for crop production
 - Elimination of pesticides, herbicides, fungicides, artificial fertilisers, waste and pollution from agriculture
 - Zero-footprint precinct with closed-looped water, energy and waste recycling systems.

- Social Benefits**
- New vibrant spaces for social interaction and collaboration
 - Educational opportunities and community building programs
 - Promote healthy and sustainable lifestyles

6 Main Features of LAB

Walking Boulevard and Micro-Retail Spaces

A walking boulevard will intertwine academic, commercial and green/blue public spaces to create a lively, visually stunning and productive precinct. Exciting organic-associated boutiques and other supporting businesses will be subtly woven within the boulevard's other main facilities to create a seamless, multifaceted experience for residents, academics, professionals, students and visitors from greater Denmark

LAB Restaurant and Café ②

The LAB café and restaurant will be LAB's flagship eateries for organic, creative and inspiring dishes that ignite the senses with delightful flavours and smells. All ingredients will be sourced from LAB and local organic farmers.

Farmers Market ①

The Farmers Market will be not only be the place to grab your vast selection of organic food and high quality ingredients, but will also be a public forum for the community and LAB's initiatives and activities. As the entrance to LAB, it will also act as a platform for creative start-up enterprises, businesses and programs that promote positive community interaction. All food items will be sourced from LAB or local organic farmers.



Research, Exhibition and Conference Centre (RECC) ④

The RECC will be the central heart and brain of LAB. The building will be designed for optimal collaboration between public, private and university activities. The RECC's commercial facilities will include conference rooms, an exhibition space, and private offices. Incorporated around these will be DTU's affiliated research, testing and teaching facilities. The high profile placement (adjacent to highway) is meant to ignite curiosity of passers and be an architectural expression of the project and concept.



Commercial Production Facilities ⑤

Utilise cutting-edge technologies to deliver a fully sustainable urban agricultural industry for Lyngby Taarbæk. The densely built, highly efficient, scalable system will be designed to produce all the fruits and vegetable needs of the Kommune and DTU. Crops are monitored closely and provided with species specific, high yield growing conditions. The food will be distributed within the city via local groceries, online deliveries and through the farmers market. The farm will focus on high-margin edibles initially and then expand to a full array of fruits and vegetables after market penetration.



Educational Visitors Centre - 'Be immersed in a realm of knowledge' ③

A spectacular educational centre where visitors embark on guided tour of the entire farming process from farm to table, and see all of LAB's current projects and initiatives. The centre will also feature youth and adults workshops/courses and be the largest deliverer of urban agriculture education programmes for pre-school, primary school and secondary school in Denmark.



Site Location
Boulevard: A 2.7km strip of vacant, road-bound land approximately 70m wide. *City Section:* A vacant rectangular area (approx. 650m long, 100 m wide) that bridges the boulevard to Central Lyngby.



4. Byrum

Projekt 4.1 Art Park	23
Projekt 4.2 Johannes Fog's Plads	24
Projekt 4.3 Lyngby recreational area	25

I dette kapitel omhandler projekterne et enkelt og udvalgt byrum i Lyngby. Der er for alle projekter lagt fokus på at danne et område, der har til formål at tiltrække mennesker til byen samt at forskønne denne. Fælles er desuden, at opholdet skal have en høj nydelsesværdi og dermed styrke det frivillige samt sociale ophold i byen. Byrummene skal være inviterende og kunne opfylde nogle af de endnu ikke efterkomne behov hos brugerne af andre faciliteter i Lyngby. Tiltrækningen skal dels give mere byliv, samt give en større livskvalitet igennem en øget nydelsesattraktion i byen.

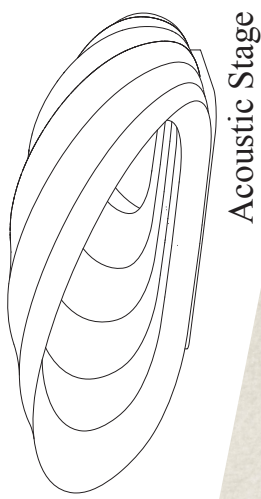
De tre byområde projekter er placeret på hver deres lokation i Lyngby, men har alle til formål at tiltrække Lyngby borgeren såvel som de studerende fra DTU, ved attraktioner og arrangementer.

Art Park

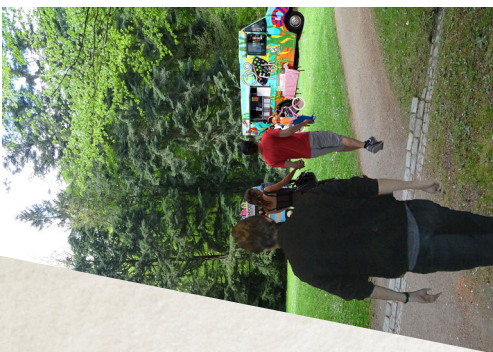
reinvents social life and promotes sustainability in Lyngby with respect to local demography and cultural heritage

Art Park

A Sustainable Tradition



Acoustic Stage



Sustainability

Social

- Multicultural Art / Performance / People
- Multigenerational Activities
- Cross Professional
- A good place for people to have gatherings, make friends, mingle and relax
- A good opportunity for people to be exposed and learn to appreciate arts

Environmental

- Local Production
- Recyclable Materials (packaging, Utensils)
- Low Energy Consumption Fixtures (Unplugged stage, Energy Saving Lighting)

Economic

- Fair Trade
- Affordable Performance
- Renting of Units to Vendors

Economic

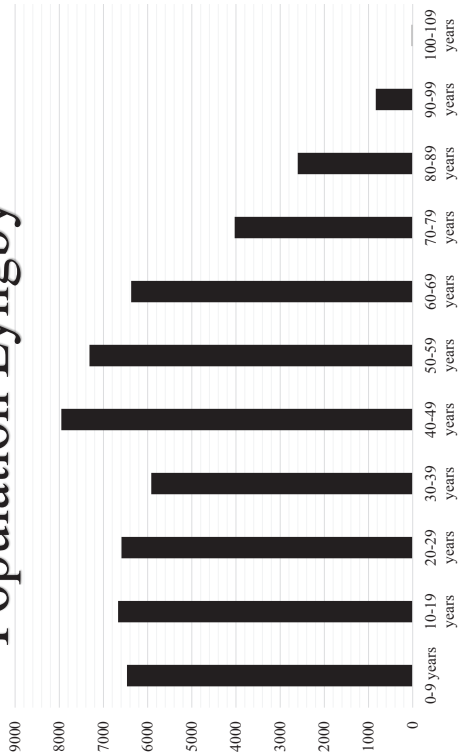
Income

- 15% of Total Profit from Vendors
- Recycling of Recyclables (e.g. cans, bottles)
- Special Events Tickets (100 Kr)
- Sponsorship from Local Companies

Expenditure

- Event Location Rental (If Any)
- Event Equipment
 - Portable Toilets
 - Chairs / Tables
 - Trash Cans
 - Lighting
 - Stage
- Clean Up
- Performers (Musicians, Artists)
- Utilities (Water, Electricity)

Population Lyngby



Authors: Anton Corba, Etienne Douguet, Horacio Emanuel Najar Ramos, Tan Jian Hao

May 2015, Lyngby

JOHANNES FOG'S PLADS - A NEW CITY SQUARE



GROUP 9
GIULIA ANGELI s146553
HERET KNIAZEVA s142129
JULIA FABRICIUS s113520
SARA MASTROROSA s146091

CHALLENGES REGARDING PUBLIC PLACES

LACK OF ATTRACTIVENESS FOR YOUNG PEOPLE – there is not much reasons for students to come and spend time in the city centre. Lyngby as the University City should have much more attractive social events inviting young people to use the city facilities in the centre.

LACK OF PUBLIC PLACES – there are lots of opportunities for shopping in the centre of Lyngby, but not enough public areas to meet people, to sit outside without making purchase in a café or restaurant. In addition to this the public places that are in the city are often hidden, and therefore people don't use them.

JOHANNES FOG'S PLADS – is an area with a lot of potential due to it's location and layout. Newertheless the square is not actively used for different events and not contributing to the social activity.

WHAT WE AIM:

To develop Johannes Fog's Plads into active city square
We suggest to create a new and attractive image and active usage for the well-located and ready-built square

To contribute to the change of Kongens Lyngby identity
We suggest to come up with branded events on the square which would also promote international communication

To make the city centre attractive for young people
We suggest to bring regular students' social events to the city centre and to the square

BENEFITS FOR THE SQUARE

The area is **public owned** which means that it has good conditions in terms of creating different public events

The **parking possibilities** are very good, there is a parking area next to the square and direct access to the parking lot underneath Magasin

There is a possibility to **expand the area**, so the parking space next to the square can be used during bigger events

Every day lots of **people pass by** the area and it works as an intersection point between the station, Cinema, Magasin and the Mall

The area is **located in the city center** and it lies close to many different functions in the city and is therefore an ideal place for different kinds of activities

DISADVANTAGES FOR THE SQUARE

The square is not clearly accesable since it is **hidden** behind Magasin and the Cinema, which could cause that people don't notice it's there

The area can seem to be **too big and open**, which could cause the feeling of exposedness and therefore people don't like to stay there

Especially during the evening and night, there are **poor lighting conditions** on the square, which can cause that people don't want to stay there

There are very **poor staing options** because there are only a few places to sit and they are not very comfortable to sit on. Their placement doesn't encourage to social activities

All 4 entrances to the square must look attractive and inviting

The overall image of the square is "green", using natural materials for street furniture, plants and plants installations to make the square sustainable

Efficient lighting plan must be implemented to ensure proper lighting during night-time and visual effect to decorate the square



The square could be used for orgianizing concerts for different audience. It can improve the nighttime-economy in lyngby and the social night life

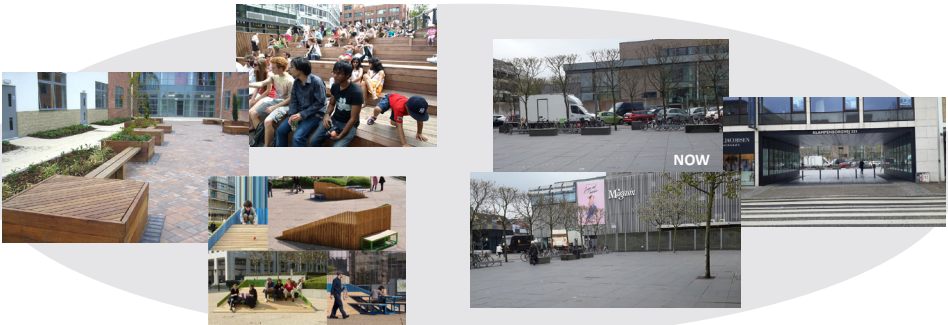
It could also be used for political and informationalspreading activities. These events could be annual or semiannual because bigger events like these require a bigger intallations and more serious preparations like stages

The event could also make focus on sustainability, by avoding using plastic or other non-sustainable materials

WHO COULD MANAGE THE ACTIVITIES IN THE JOHANNES FOG'S PLADS?

A municipality-owned Non-Governmental Organisation with certain aims and responsibilities:

- to brand the events/activities and to do the promotion
- to manage the activities on the square
- to cooperate with DTU and other educational institutions in Lyngby for organizing students events
- to prepare and manage the budget and to cooperate with local businesses



The square could also host different pop-up events that bring people together

This could for example be an annual christmas market where the square could be lit by a big christmas tree and people can enjoy hot wine and apple slices. This event could extend for a whole week

Another idea is to make semiannual events, where DTU can present their work and maybe make some promotional actions

Last but not least the square could host an international food market to integrate the international people living, studing and working in Lyngby, but also to promote international cusine to local danish people



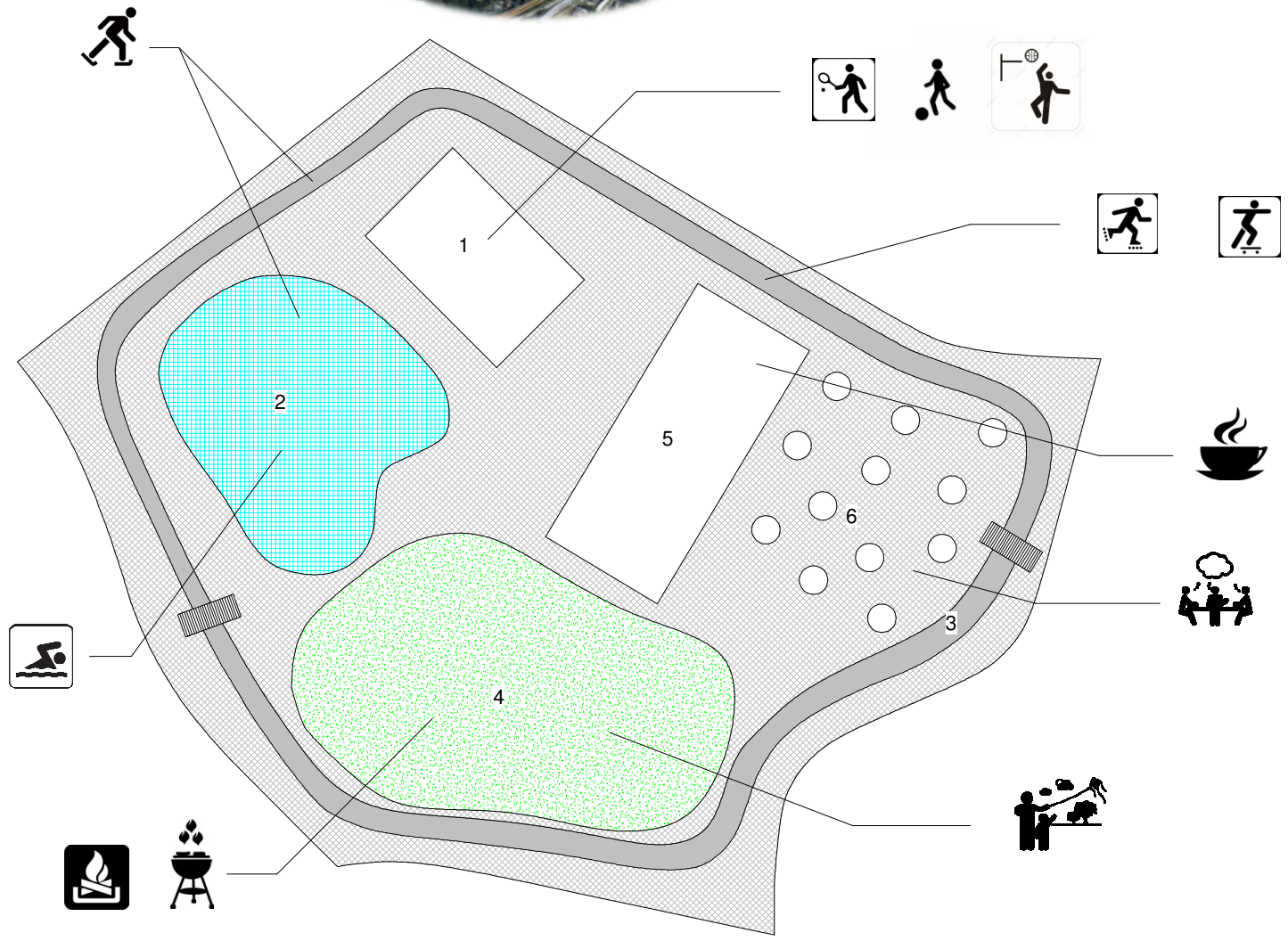
Once or twice during the week the square could have a market where local shops and craftsmen or other businesses could put up stalls and sell their goods

The markets could have focus on organic food and sustainable wrapping in order to make people aware of the environmental issues

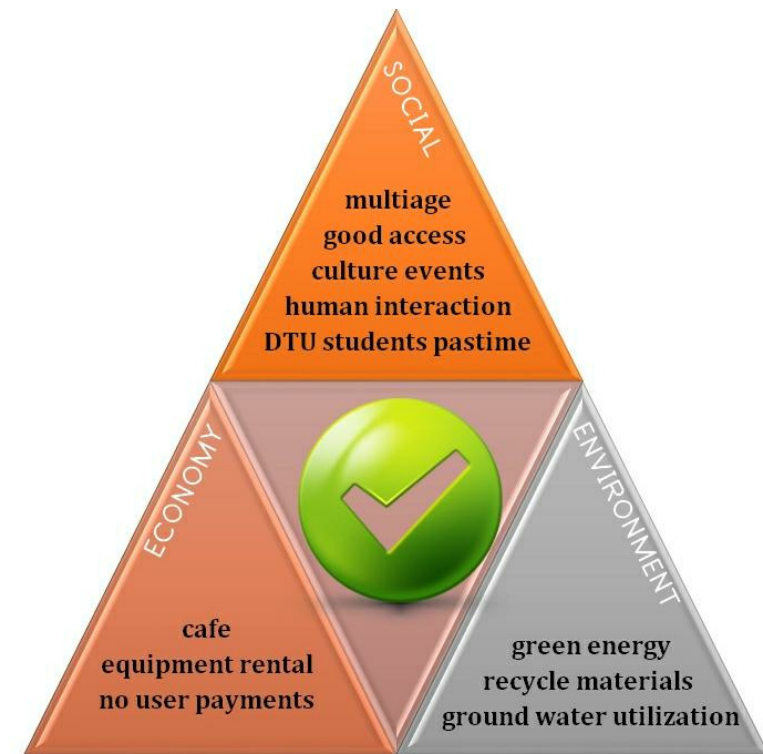
The markets should involve different age groups, in order to make the markets more diverse







The design of the pavement should lead and guide people into the area and connect the different functions surrounding the square

LYNGBY RECREATIONAL AREA



	NAME	FUNCTION
1	MULTICORD	Football, Basketball, Tennis
2	SWIMMING POOL	Multifunctional with different facilities
3	SKATE LANE / ICE SKATE LANE	The skate lane will be available for skaters, rollerblading BMX etc. during summer and available for ice skating during winter
4	BARBECUE AREA	Grass area with the possibility to sit on the grass or at tables
5	CAFE	Sells beverages, leases equipment for sport
6	SEATING AREA	Possibility to sit and work, drink coffee, cultural events such as displays of artists



						
Age range	6-12	13-18	19-28	29-40	41-60	60+
Everyday life	School: 8-15. 5 days a week	School: 8-15. 5 days a week	DTU: 8-17. 5 days a week	Work in Lyngby: 8-16. 5 days a week	Work and live in Lyngby	Retired, Lives in Lyngby
Favorite spare time activity	Playing with other kids, sports	Meeting Friends	Party, active time spending	Spending time with family	Spending time with the family, culture events	Walking meeting friends and family
Friends and family	School friends in Lyngby	Family and friends in Lyngby	DTU colleagues lives around Lyngby	Colleagues, family, kids, adult friends	Families with grown/teen kids, adult friends	Adult kids, grandchildren, friends
Benefits	Place to play, skating, swimming, ice-skate in winter and spend time with friends and family	Place to go and meet friends, playing sports, skate/ice-skate	Place to party, relax, do activities, meet to do schoolwork, sunbath, spending time outdoor	Place to go with kids, spending family time, barbecue with friends and family, relax	Opportunity to enjoy various cultural events, meeting friends, relax	Spend free time in active way, meet friends, enjoy cultural events, spend time with grandchildren

5. Bolig

Projekt 5.1 27
Sustainable living for the DTU youth of tomorrow

Projekt 5.2 28
The home of knowledge

Med en mangel på studieboliger til blandt andet udenlandske studerende er der sat fokus på at etablere disse tæt på Lyngby. Ved enten at skabe forskellige typer boliger eller ved at skabe områder omkring studieboliger til fælles brug, skal det være attraktivt for både borgere samt studerende i Lyngby. Bæredygtige studieboliger skal tiltrække de (udenlandske) studerende til at ville bosætte sig i Lyngby samt dermed at få de studerende til at integrere sig mere i byen.

DTU SUSTAINABLE LIVING

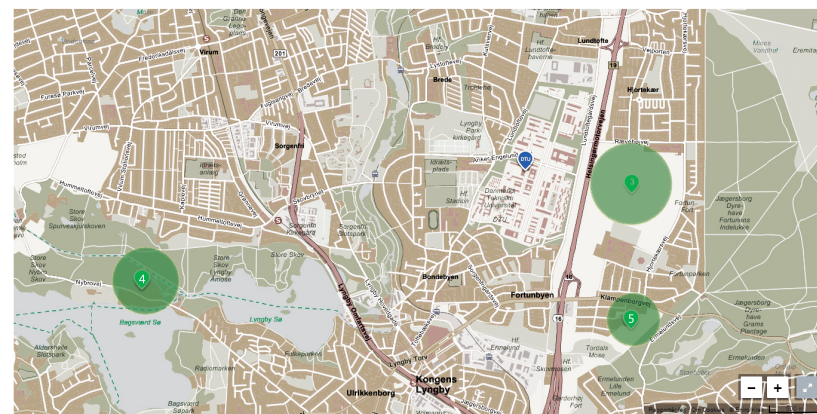
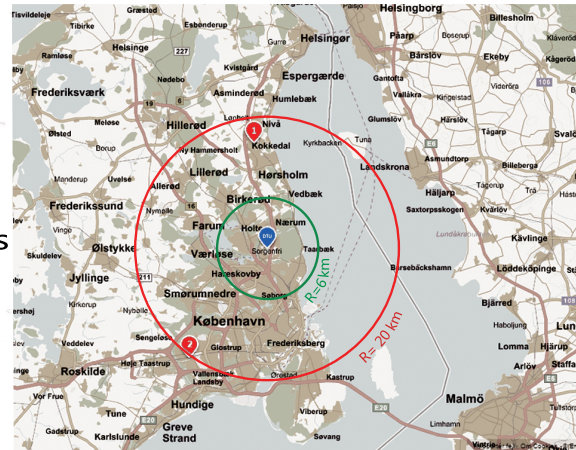
for the DTU Youth of Tomorrow

Urban planning project proposal for the Lyngby Taarbæk Kommune

Key problem:
Accommodation for DTU students

Facts:

- Insufficient number of available accommodation and bad condition.
- Long distance between DTU campus and current DTU accommodation.
- Students of DTU mostly do not feel part of Lyngby Taarbæk Kommune.



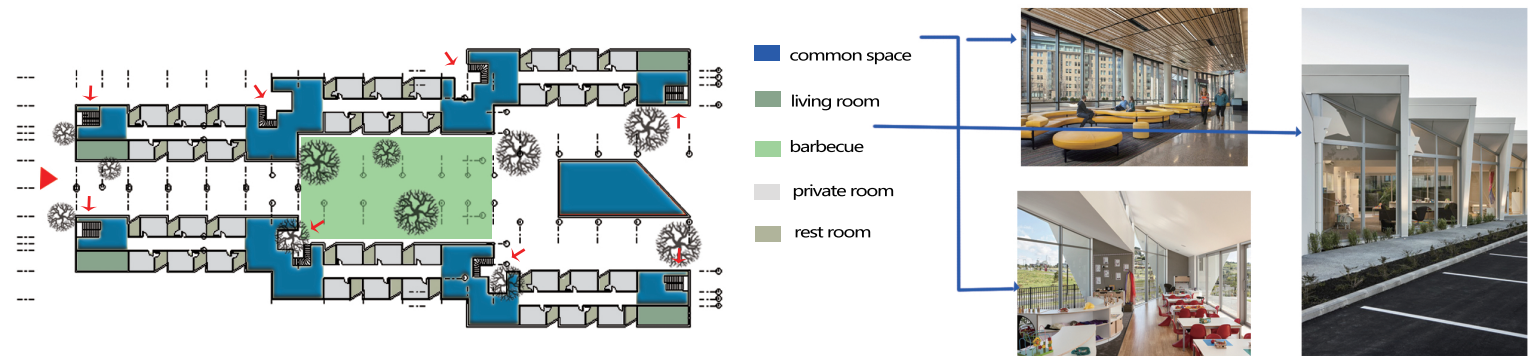
Legend:

- 1: Kokkedal dormitory
- 2: Albertslund dormitory
- 3: Proposed student housing
- 4: Proposed student housing
- 5: Proposed student housing

Solution:
Self-sufficient affordable sustainable dormitories in Greater Lyngby Area



“Bringing life to student living.”



Lyngby-Taarbæk Kommune working in synergy with DTU students:

Public real estate: Use for different activities at different ages, introducing multi-usage of buildings.

Collaboration: Including students and citizens in dialogue and decision making.

Long-term strategy and space management: Detailed urban design planning and sustainable approach.

Funding: Collaboration with Danish engineering companies – funding proposal, EU grants etc.

Self-sufficient dormitories which create good indoor environment necessary for the sustainable living and well-being of the students.

Raghuveer Kamalakar, s146334
Wisam Elias Neaman, s113763
Søren Bregendorf, s133720
Lucile Sarran, s141487



The Home of Knowledge

Problem Statement

One of the problems for international students in Denmark is that they often have difficulties to integrate in the Danish society, partly because they don't find the time to be taught the native language, which creates a barrier when trying to find a job. This combined with the lack of affordable housings makes it harder to settle down in Denmark. Too many international students make their visit to Lyngby a temporary one, whereas a lot of companies want them to stay and work there. By answering the following questions, a desired solution to this problem might present itself.

1. How can an energy efficient affordable housing area in the vicinity of DTU Lyngby could help integrating international students into the Danish society?
2. Can this be done not only to make Lyngby a more culturally mixed location, but also to make the transition from temporary international student to permanent inhabitant easier?

Proposal

To achieve a solution to the problem, a building with the name **"The Home of Knowledge"** could be built. This building would be divided into 3 main sections, with a section dedicated to sharing and teaching, flats for families, and dorms for students. Facilities for the children who live there have to be established, to help the families settle down. Since this area should be very environment aware, a low number of parking spots for cars should be implemented just for the few occasions where a car is needed or people with cars come to visit. As many bike parking as possible should be established so that people choose to take the bike or public transportation to their designated destination.

A connection between Lyngby and DTU

The house would be located right between DTU and the center of Lyngby. It would therefore be accessible from students from the university as well as any inhabitant of Lyngby.

A bus line connecting DTU to Lyngby station and stopping in front of the house would be set, either as an alternative itinerary for the 300S or as a fast shuttle. The new path is represented by the gray line on the opposite map.

Sustainable design and use

The building would be designed according to the standard set for 2015 in the Danish 2010 Building Regulation Code for low-energy houses, relatively to the thermal performance of the materials, energy consumption of the equipments and indoor climate qualities. The orientation of the windows and the shadings would be optimized in order to avoid heat losses and prevent overheating. Solar thermal panels facing South would provide hot water for part of the housings.

A covered and secured bike park would be integrated to the building. The bike lane on Klampenborgvej being directly accessible from the house, commuting by bike becomes the easiest way to reach both DTU and the center of Lyngby, thus limiting the necessity of owning a car.

No cultural mix in Lyngby

Difficult to find a job for foreigners

No integration of foreigners, language barrier

Easier to find a job: foreigners settle in Denmark

Better integration, easier communication

Home of Knowledge: cultural exchanges

Encouraging cultural exchange and integrating foreigners

The Home of Knowledge would reflect the diversity of society in Lyngby: it would include a student dormitory and flats for families, couples, singles... Everybody could apply to live in the House, as long as they are willing to dedicate some time to help with cultural mix in Lyngby. People from any social class and generation would be welcome, which would lead to a better cultural exchange.

Local and international people together would organize cultural events, which would be open to residents and people from outside the house. This would help Lyngbys citizens to develop their network and open themselves to other cultures, which of course works both ways. There could be international dinners with cuisines from different cultures, conferences, art exhibitions, etc. Those activities would bring people with the same interests together and improve the social life in Lyngby.

Flats for couples and families

Children playground

Conference center, language classes

Car park

Covered bike park

Student dormitory

An economical advantage

Linking students and companies – capital inflow from companies
By inviting companies to be part of the Home of Knowledge, a connection between student and company can be made very early benefiting them both. Companies willing to attract students could participate in financing the construction, and in exchange the Home of Knowledge could easily be used for demonstrating new technologies promoting green energy, introducing them to a vibrant student community. By letting companies use the Home of Knowledge as a demonstration board, the students will live with new energy efficient technologies funded by the companies.

A regional and national bonus
If international students stay in Lyngby, after having finished their studies, Danish companies will gain valuable highly educated labor, benefitting the national economic growth.

Providing affordable housing to different social categories
The Home of Knowledge would have rooms and apartments everyone can afford, giving students and people from any other social class a chance to live in an energy efficient green home.

Conclusion

The Home of Knowledge would be beneficial to Lyngby in all three aspects of sustainability.

By implementing "The Home of Knowledge" where a cultural exchange softens the barrier between cultures, and foreigners are actively exposed to the Danish society and taught the native language, the integration of international students would occur more smoothly, which would most likely lead to an increase in job opportunities. This would lead to international students more permanently settling down in Denmark.

Danish residents could provide international students from the house and outside with Danish classes, in order for them to overcome the language barrier and ease their professional integration, which would encourage them to find a job in Denmark. Foreigners could also provide Lyngby citizens with language classes, which could be beneficial for them from a cultural as well as professional point of view.

6. Generel samspil

Projekt 6.1
Transforming Lyngby into a student hot spot

31

Projekt 6.2
Bright urbanization

32

For to af projekterne er samspillet mellem de forskellige parametre for et mere bæredygtigt Lyngby samt en bedre forbindelse i byen belyst. Der er i disse projekter lagt vægt på hvordan, at det er nødvendigt at implementere flere ideforslag og forandringer for at opnå, at Lyngby får en identifikation som en vidensby, samt fremstår mere bæredygtigt.



Bright Urbanization

Unfolding the potential between DTU and Lyngby

HOW TO IMPROVE SYNERGIES BETWEEN DTU AND LYNGBY?

Citizens, companies and students don't interact with each other and there is the need to create a common ground.

STRUCTURES

New Connections to DTU

- New bridges only for pedestrians and cyclists



- Connecting Bright City and DTU from the freeway to improve mobility



The Heart - Common Area

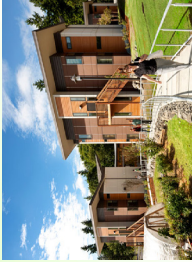


Accommodation

- Two-story family residences

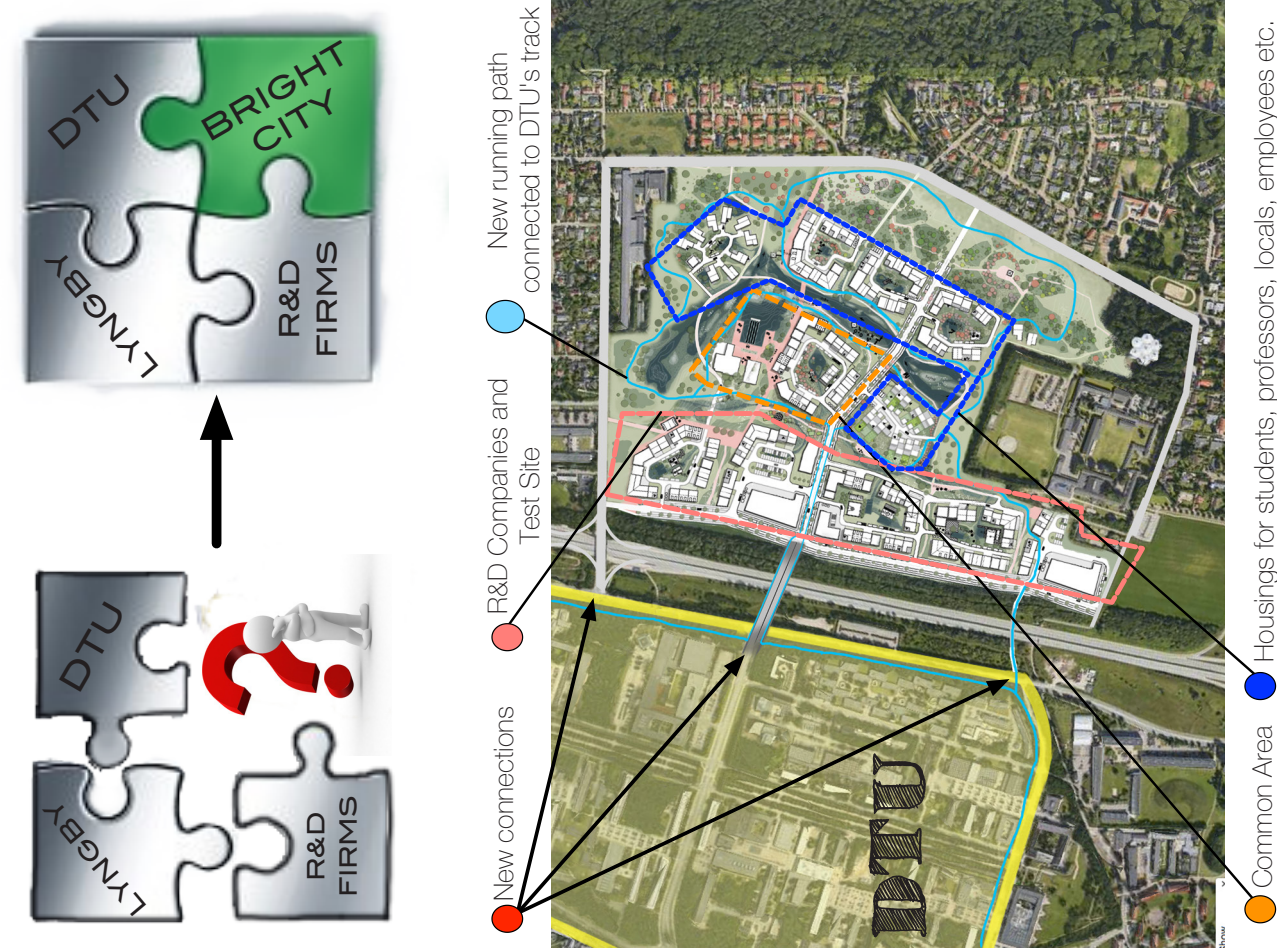


- Three-story student dorms



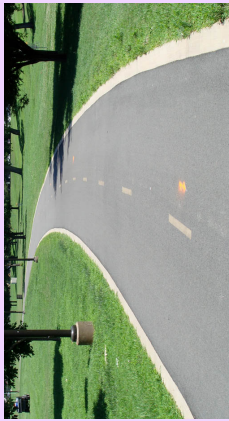
Tech Test Site

- Visualization of the future technologies for the inhabitants
- Inspiration to develop new ideas
- Eco-friendly solutions

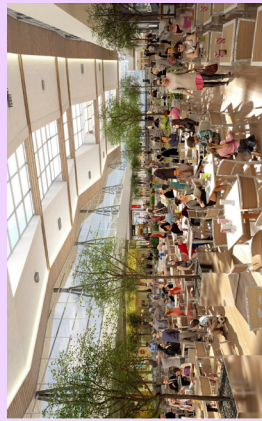


FACILITIES

Cycling and Running Paths



Food Court



Package-free Grocery Store



Private lessons from DTU students for every age



Social Events

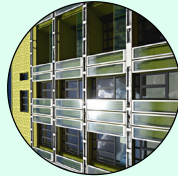


Swapping clothes parties

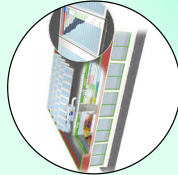


Outdoor Sport Activities

SUSTAINABLE SOLUTIONS



Algae Clean Energy and waste water treatment



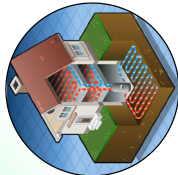
Solar energy generates heating, cooling and electricity



Sunlight brought into rooms through fiberoptic cables



Green roofs retaining excess water



Geotechnical energy reduces central heating consumption



First Smart-Grid test area in Denmark



DTU Management Engineering
Department of Management Engineering

42273 - Urban Planning and Sustainable Urban Development - **Group 20**
Jessica Linda Ruina (s146249), **Martin** Kaliszczuk (s113925),
Søren Falk Thomsen (s140046), **Tobias** Valentini (s050400).

